Ontario

Minister of Natural Resources

Annual Report

1977

Annual Report

of the Minister of Natural Resources
of the Province of Ontario
for the fiscal year ending March 31, 1977
$1.00

TO HER HONOUR
The Lieutenant-Governor
of the Province of Ontario

MAY IT PLEASE YOUR HONOUR
The undersigned begs respectfully to present to your Honour the Annual Report of the Ministry of Natural Resources for the fiscal year beginning April 1, 1976, and ending March 31, 1977.

Miller

FRANK S. MILLER
Minister

Ontario
Ministry of
Natural
Resources

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**Related information of interest is reported in Statistics, 1977.*

Goal

The goal of the Ministry of Natural Resources is defined as follows:

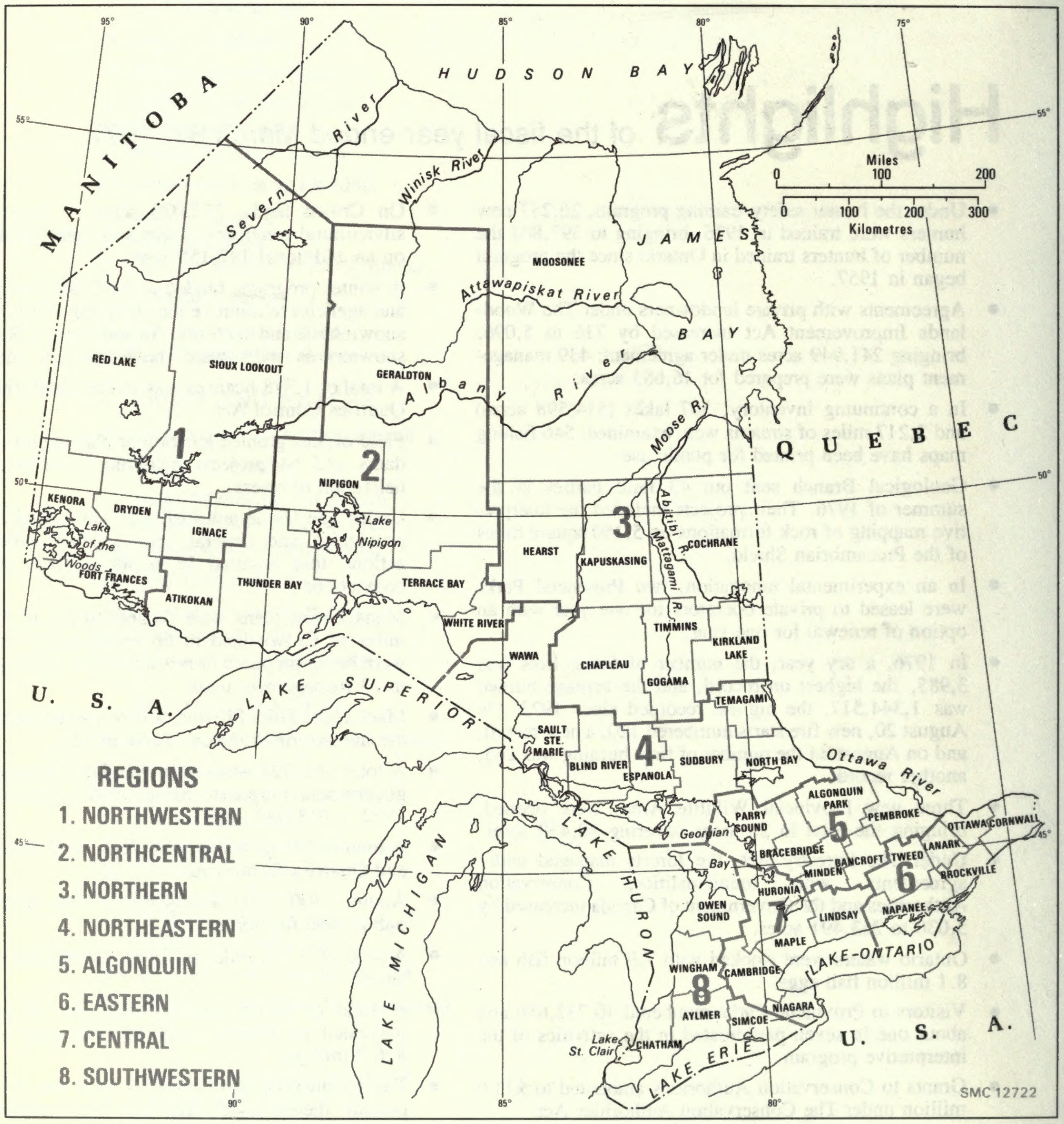
"To provide from Crown lands and waters, and to encourage on private lands and waters, a continuing combination of resource development, outdoor recreation and quality environment most consistent with the social and economic well-being of the people of Ontario."

Highlights of the fiscal year ended March 31, 1977

- Under the hunter safety training program, 26,247 new hunters were trained in 1976, bringing to 397,804 the number of hunters trained in Ontario since the program began in 1957.
- Agreements with private landowners under The Woodlands Improvement Act increased by 716 to 5,096, bringing 241,949 acres under agreement; 439 management plans were prepared for 16,683 acres.
- In a continuing inventory, 507 lakes (514,598 acres) and 2,217 miles of streams were examined; 546 fishing maps have been printed for public use.
- Geological Branch sent out 43 field parties in the summer of 1976. Their projects included the interpretive mapping of rock formations on 5,150 square miles of the Precambrian Shield.
- In an experimental innovation, two Provincial Parks were leased to private operators for one year with an option of renewal for one year.
- In 1976, a dry year, the number of forest fires was 3,985, the highest on record, and the acreage burned was 1,344,517, the highest recorded since 1923. On August 20, new fire starts numbered 120, a new record, and on August 24 the number of fires burning was 265, another record.
- Three new Provincial Wildlife Areas were opened, bringing the total to 28 areas covering 80,430 acres.
- Under The Forestry Act, the forests managed under agreements with municipalities, Conservation Authorities and the Government of Canada increased by 5,030 to 263,491 acres.
- Ontario waters were stocked with 7.9 million fish and 8.1 million fish eggs.
- Visitors to Provincial Parks numbered 10,732,666 and about one in seven participated in the activities of the interpretive program.
- Grants to Conservation Authorities amounted to $23.9 million under The Conservation Authorities Act.
- Payments under the Mineral Exploration Assistance Program amounted to $403,351, bringing the five-year total to $2,101,992.
- A total of 556,149 hunting licences was sold to residents in 1976 and 31,285 to non-residents.
- The number of lakes in Ontario was estimated at 396,792.
- On Crown lands, 272,073 acres of forest received silvicultural treatment. Trees were marked for cutting on an additional 142,155 acres.
- A winter program, funded at $350,000, assisted clubs and agencies to improve the grooming of 7,000 miles of snowmobile and ski trails. An additional 1,500 miles of snowmobile trails were maintained on public land.
- A total of 1,578 licences was issued under The Pits and Quarries Control Act.
- Field offices granted location or plan approvals for 219 dams and 64 projects involving diversion or channelization of rivers.
- Under The Game and Fish Act and related Acts, both provincial and federal, conservation officers took actions that resulted in 6,988 seizures and 5,791 convictions.
- Management plans were completed for 83,717 square miles of Crown land in 66 management units. Plans were being prepared or revised for 55,140 square miles in 23 management units.
- MacGregor Point Provincial Park was opened, bringing the number of Provincial Parks to 122.
- A total of 2,721 acres of private land was acquired for government purposes, bringing the acquisition since 1962 to 613,000 acres.
- A total of 278 townships was designated under The Pits and Quarries Control Act.
- About 1,400 water access points were maintained on public land for boaters.
- A total of 5,552 miles of forest access road was maintained.
- A total of 463.5 million cubic feet of wood was harvested on Crown lands; the stumpage value was $26.8 million.
- The commercial fish harvest in 1976 was 45.1 million pounds; the ex-vessel value was $12.5 million.
- In the 1975-6 fur year, 713,745 wild fur pelts were exported or tanned; their value was $8.5 million.
- Seventy-six regulations were made under the authority of Acts administered by the Ministry and 430 Orders-in-Council were prepared and processed.
- Internal Audit Branch was established.

Field Organization

Ministry of Natural Resources Regions and Districts in Ontario



Division of Forests

Forest Research Branch

The Branch provides scientific and technical knowledge and information to improve the management of forest resources in Ontario.

The main research effort is in tree biology and forest ecology (rather than wood technology or economics), aimed at forest regeneration and afforestation and at improving present forests.

The production and performance of planting stock used for the artificial regeneration of Ontario's forests is a major program in which several disciplines are engaged. Studies included treatment of seed for optimum germination, effects of seedbed treatments on survival and growth after outplanting, characterization of physiological condition of planting stock, handling and storage of stock, and extension of planting season. Most of the work deals with coniferous species such as pines and spruces, but increasing attention is being paid to the artificial regeneration of broadleaf species such as silver maple, basswood, black locust and ash.

Considerable gain in growth of conifer species may be obtained by improvement of seed sources of native species and breeding of hybrids. In spruce, present emphasis is on progeny tests to determine the genetic value of seed production areas which have been selected for the vigor and good form of the trees. Similarly, tests have been performed on "plus" trees, individuals of exceptional quality. Work is in progress on hybridization and evaluation of other spruce species.

In pines, the development of blister-rust-resistant white pine continued, and the groundwork was laid for extensive work on jack pine.

Fast growing species, such as hybrid poplars, established near mills and managed intensively on the proper sites, can provide quickly a useful source of fibre, particularly in southern Ontario. The testing and selection of clones to provide an ideal combination of rapid growth, frost and disease resistance, and desirable fibre characteristics comprise an important program. Other uses of the plant material, for example as a protein source, are also being investigated. Equipment was designed and built for harvesting very closely spaced hybrid poplar plantations. Much of the work has centred on the hybrid poplars but some work is now under way on larch.

The hardwood forest of southern Ontario is an important source of lumber, veneer and speciality products such as maple sap. It is also an important recreational resource for the public and private owners. Studies involve unravelling the complexities of tolerant hardwood forest growth to improve the basis for management decisions, rehabilitating lowland and upland hardwood forests in southwestern Ontario to provide fibre and other products, and investigating the production of maple sap.

In northern Ontario, the spruce-fir-aspen forest is a major forest type. Studies undertaken by the Branch concentrate on the upland sites with particular emphasis currently on the quality and variation of aspen regeneration, the management of balsam fir, and regeneration of the spruces.

Soil and climate have a profound influence on seed germination and on survival and subsequent growth of seedlings, competing shrubs and trees. Studies include the assessment of soil moisture and nutrients, tree nutrition and fertilization, and root growth in relation to soil conditions and its effect on stem growth, biomass production and nutrient cycling.

Knowledge of the growth potential of conifer plantations and managed hardwood stands helps the forest manager to decide the best treatment for each forest condition. Studies to date have concentrated on obtaining information for red pine and hardwoods in southern Ontario. The broad field of obtaining, interpreting and using information on the forest resource is also being examined.

Forest Management Branch

The objective of the Branch is to produce optimum and continuous industrial, social and environmental benefits from public forests, and to encourage and assess similar production on private lands in Ontario.

Tree Seed Program

The inventory of forest tree seed in storage at the Ontario Tree Seed Plant, Angus, as of June 1, 1976, was 3,615,000,000 viable seeds of 92 species, weighing 16,000 kg and valued at $940,000.

The year 1976 was a good crop year for many of the species used in the reforestation program.

1976 Seed Crop by Species	Hectolitres Collected
Jack Pine	10,629
White Spruce	173
Black Spruce	171
Black Walnut	1,963
Red Oak	124
White Cedar	60
Other species	528
TOTAL:	13,648

Tree Improvement

Plus trees selected	395	trees
Scions, Grafted	9,660	scions
Grafted stock, Outplanted	1,893	trees
Seed Collection Areas*	8,525	acres
Seed Production Areas	633	acres
Seed Orchards	198	acres

**A term used to describe superior stands which are reserved and logged periodically to supply seed and then regenerated with the same seed source to maintain them as gene pool reserves.*

This program is designed to improve seed quality and increase the quantity of available tree seed to meet the requirements of the production policy.

Seed Distribution

A total of 1,401,480,000 viable seeds were used to carry out 174 regeneration projects in the Province during 1976.

This was an increase of 146,470,000 viable seeds over 1975. The seed is used in four main programs:

Nursery Stock Production	343,400,000
Tubelings	17,040,000
Direct Seeding	1,040,248,000
Research & Misc.	792,000
Total Viable Seed	1,401,480,000

Planting Stock

Distribution,	Conifers	43,223,501
	Hardwoods	2,757,621
	Total	45,981,122
Production Targets seeded		73,532,500

Seeding targets have been reduced due to a re-examination of silvicultural prescriptions to utilize more direct seeding and modified cutting to achieve regeneration on selected sites.

Equipment Development

Final field testing of the Ontario Tree Planter was completed and arrangements are being made to turn over production to a local manufacturer. At Kemptville Nursery a used cigarette machine was converted to produce ¾-inch peat-filled cellulose containers for growing tree seedlings. Some 200,000 containers were produced for field experiments.

Silvicultural equipment built at the Mechanical Research Unit included a V-plow for use with the Ontario planter, a machine for harvesting short rotation hybrid poplar, and a device for producing poplar cuttings.

Private Lands

The Woodlands Improvement Act	Agreements	Acres
New agreements activated 1976-7	716	23,860
Agreements in effect March 31, 1977	5,096	241,949

Number of Trees Planted: 8,215,690.

These operations are carried out on private land under The Woodlands Improvement Act agreements. The acreage treated is an integral part of forest production targets, particularly in southern Ontario where there is no significant area of Crown land.

Advisory Services

1. Number of public inquiries serviced	63,373	
2. Number of field inspections made	7,113	
3. Number of forest management programs prepared	439	
4. Total area for which management programs were prepared	16,683	acres
5. Trees purchased and planted by private landowners	7,647,726	
6. Timber marked for harvesting:		
Sawtimber	2,502,416	cu. ft.
Pulpwood	12,086	cords

Classification of Cut-Over Forest Land, 1976-7

Areas in Acres

Cutting Method	Regeneration Required	Satisfactory Natural Regeneration	Regeneration not Required	Total
Clear Cut	224,362	57,761	–	282,123
Selection	–	44,521	–	44,521
Partial Cut	–	–	60,622	60,622
TOTAL	224,362	102,282	60,622	*387,266

**The reduced area from previous years is a reflection of strikes affecting the industry in 1975-6.*

Regeneration and Tending of Forest Land, 1976-7

Areas in Acres

Treatment	Crown Land	Agreement Forests	W.I.A.	Sub-Total	Other Patent Lands	Total
REGENERATION						
Planting Nursery Stock	41,687	1,837	10,358	53,882	5,830	59,712
Container Stock	4,955	–	–	4,955	–	4,955
Seeding	66,814	–	–	66,814	–	66,814
Modified Harvest Cut	27,426	204	–	27,630	–	27,630
Scarification	8,002	112	–	8,114	–	8,114
Seed Trees	10,147	–	–	10,147	–	10,147
Total	159,031	2,153	10,358	171,542	5,830	177,372
TENDING						
Hand Cleaning	11,308	2,036	1,392	14,736	–	14,736
Herbicide Spraying	24,661	670	714	26,045	–	26,045
Thinning Improvement Cuts	34,218	5,149	9,696	49,063	651	49,714
Pruning	928	1,184	431	2,543	–	2,543
Fertilization, Drainage	283	1,101	279	1,663	–	1,663
Total	71,398	10,140	12,512	94,050	651	94,701
TOTAL AREA TREATED	230,429	12,293	22,870	265,592	6,481	272,073
Site Preparation For Seeding, Planting or Modified Harvest Cutting	85,730	539	2,375	88,644	–	88,644
Tree Marking	114,338	6,893	13,302	134,533	7,622	142,155

7. Activities with youth groups	194 groups
8. Public education activities and services	1,241 items
9. Days of forestry instruction provided to schools, colleges, universities	392 days

The above data are a measure of the forestry extension program offered to all landowners. A change in landowner management practices is desired to ensure the establishment and maintenance of private forests for the production of forest products and forest values.

Agreement Forests

Agreement Holders	Added 1976-7	Released 1976-7	Acreage
1 Government of Canada			3,532.00
24 Conservation Authorities	329.00		93,818.06
19 Counties	461.20		144,047.56
10 Townships			3,029.24
6 Regional Municipalities	4,240.00		19,064.03
60 Totals	5,030.20		263,490.89

The agencies reported above have forest management agreements with the Minister under The Forestry Act. The agencies' forests are an integral part of forest production targets, of particular importance in districts with no significant Crown land areas.

Pest Control

The most serious problem in Ontario's forests in 1976 continued to be the eastern spruce budworm. Since 1967, the infestation has expanded steadily. By the end of 1976, the budworm had attacked a gross forested area of 36.5 million acres (14.6 million ha), with the area infested in 1976 10 per cent higher than in 1975.

Aerial spraying to protect the spruce-balsam forest was conducted on 101,000 acres. In Northeastern Ontario and the Algonquin Region, spraying was confined to Provincial Parks with high recreational value (14,100 acres), whereas in Northwestern Ontario, the program was directed to 87,000 acres of production forest.

Two chemical insecticides, Matacil and Sumithion, were used for the majority of spraying. Matacil was applied at 1.5 ounces active material per acre and Sumithion at four ounces active material per acre. In part of the area, Matacil was applied, followed by Sumithion at the above rates. Orthene was applied experimentally to 1,800 acres, and a bacterial insecticide, Thuricide, was used on 2,000 acres.

The Saratoga spittlebug caused severe damage to red pine plantations in Pembroke District in 1975. In 1976, the Ministry conducted an aerial spray program against this insect on 353 acres of red pine plantation. The insecticide, malathion, was applied at the rate of eight ounces active material per acre and provided excellent control.

In co-operation with the Canadian Forestry Service, 108 acres of red pine plantation, infested with red-headed pine sawfly, was aerially sprayed with a virus which acts specifically on this insect. The application was highly effective.

In addition, small-scale treatments were required throughout the province to control a variety of pests, e.g. white pine weevil, cedar leaf miner, sawflies, white grubs, and wild currant, the alternate host for white pine blister rust. Experiments were continued to determine the effectiveness of a harmless fungus, *Peniophora gigantea*, as a biological control for root rot, *Fomes annosus*.

Timber Sales Branch

The major responsibility of the Branch is the orderly disposition of the Province's timber resource through the administration of major sections of The Crown Timber Act. This is accomplished by the review and approval of forest management plans, the allocation of the Province's Crown timber to the forest industry through various statutory methods, the licensing of forest industry mills, the measurement of the harvested volume of Crown timber, and the monitoring of factors affecting the viability of the Province's forest industry.

Management Plans

Forest management plans provide the broad framework within which forest operations are conducted. More detailed operating plans for shorter time periods identify the Crown timber stands to be harvested, regenerated and tended, and the roads and other improvements required on Crown, company and Agreement Forest management units.

STATUS OF MANAGEMENT PLANS

	Forest Management Units					
Areas in Square Miles	Crown		Company		Agreement	
	No.	Area	No.	Area	No.	Area
Approved Standard Plans	64	70,151	2	13,566	33	256
Plans Submitted for Approval	—	—	2	6,130	4	39
Plans being Prepared and/or Revised	15	27,994	8	27,146	23	105
New Inventory Required	3	11,362	14	30,127	—	—
Inactive and/or Inaccessible or not under plans	6	19,382	—	—	—	—
Total	88	128,889	26	76,969	60	400

Area data have been revised to include all land and water in each unit with the exclusion of waters of the Great Lakes.

Timber Allocation

Crown timber is allocated to the Province's forest industry in accordance with forest management principles and industrial requirements. Crown timber harvesting licences provide the Province's forest industry with the legislative authority to harvest Crown timber on an annual, allowable harvest basis. The timber harvesting licences take one of several major forms and are specific as to geographic area, tree species, volumes, stumpage and other charges, and various control measures.

Forest industry mills are licensed to operate with respect to Crown and private timber supplies in a specific locality.

Crown Timber Licences

Areas under Licence as at March 31, 1977	Number	Square Miles
Under Section 2, Crown Timber Act	31	225.6
Under Section 3, Crown Timber Act	395	98,219.5
Under Section 5, Crown Timber Act	14	62.0
	440	98,507.1

Mill Licences

	1973	1974	1975	*1976
Sawmills, 8-hour capacity				
Lumber, capacity over 50M fbm	67	60	53	53
Lumber, capacity 10M to 50M fbm	96	104	98	88
Lumber, capacity under 10M fbm	531	570	569	543
Miscellaneous	49	40	45	30
Veneer Mills	25	26	23	24
Pulp Mills	23	24	23	23
Total	791	824	811	761

***Preliminary**

Forest Industry Development

This Section is concerned with the growth and development of the components of the Province's forest industry by monitoring the demand for, and supply of, timber products and the pattern of trade in these commodities, and by analyzing resource taxation and pricing. The Section assists in industrial expansion and regional development through industrial liaison, policy development, and economic analyses.

Pulp Chips, 1976 (Preliminary)

Ontario Production	Number of Mills	Bone Dry Tons
Shipments	101	1,427,726
Inventory Adjustment		....
Total	101	1,427,726

Consumption of Ontario Chips by Jurisdictions	Number of Mills	Bone Dry Tons
Ontario	19	1,208,626
Quebec	7	134,075
Manitoba	1	1,657
U.S.A.	4	83,368
Total	31	1,427,726

Wood Measurement

The measurement of harvested timber, or scaling, determines the volume of timber removed from Crown land and Agreement Forests. It is the basis for the determination of public revenue and forest production statistics related to the forest industry. Only licensed scalers, approved by the Ministry, may carry out this important function. Timber measurement practices are under constant review to ensure that they keep abreast of the latest harvesting techniques.

Volume and Value of Wood cut from Crown Lands, 1976-7

Tree Species	Volume in Cubic Feet	Bonus	Crown Dues	Stumpage Value
SOFTWOODS				
White Pine	17,397,105.18	$ 599,295.45	$ 979,794.98	$ 1,579,090.43
Red Pine	5,100,676.82	163,424.68	289,882.75	453,307.43
Jack Pine	135,019,215.87	273,779.07	7,408,718.05	7,682,497.12
Pine, Mixed	97.50	140.69	5.56	146.25
Spruce	232,600,554.43	760,268.93	13,054,688.47	13,814,957.40
Hemlock	1,886,767.83	15,020.57	106,423.78	121,444.35
Balsam	14,780,470.20	49,541.59	832,517.86	882,059.45
Cedar	399,702.09	8,413.17	22,631.73	31,044.90
Tamarack	99,782.89	522.91	2,805.94	3,328.85
Softwoods, Mixed	78,681.95	16.13	942.27	958.40
Total Softwoods	407,363,054.76	1,870,423.19	22,698,411.39	24,568,834.58
HARDWOODS				
Maple	9,141,094.24	162,234.71	675,465.50	837,700,21
Yellow Birch	4,337,592.44	223,704.84	351,310.56	575,015.40
White Birch	2,258,292.93	28,866.30	27,957.24	56,823.54
Oak	227,626.17	11,118.37	15,650.77	26,769.14
Beech	454,415.90	17,345.38	31,210.70	48,556.08
Ash	45,376.41	1,062.85	9,074.75	10,137.60
Elm	31,320.18	1,010.32	2,602.09	3,612.41
Basswood	215,442.62	8,136.90	14,251.64	22,388.54
Cherry	20,958.42	345.12	1,734.86	2,079.98
Poplar	27,993,107.14	88,325.26	336,605.51	424,930.77
Hardwoods, Mixed	11,427,749.19	68,169.48	143,281.84	211,451.32
Total Hardwoods	56,152,975.64	610,319.53	1,609,145.46	2,219,464.99
GRAND TOTAL	463,516,030.40	2,480,742.72	24,307,556.85	26,788,299.57

Division of Mines

Mineral Resources Branch

The prime objective of the Branch is to assure the orderly development and optimum use of provincial mineral resources in line with the Ministry's policy of broadening the base of mineral development and processing in Ontario. The most important function of the Branch is to provide the Minister of Natural Resources with in-depth researched information and mineral policy options, as well as to ensure equitable mining tax assessments. Major areas of responsibility for the Branch are as follows:

(a) Development and administration of mineral resource policies;

(b) Analysis of the effectiveness of present public policies in various jurisdictions in respect of mineral resource development;

(c) In-depth world-wide mineral commodity studies on each mineral element in provincial mineral reserves, with priorities set for nickel, copper, zinc, iron ore, precious metals, uranium and structural materials;

(d) Administration of The Mining Tax Act, The Petroleum Resources Act, The Pits and Quarries Control Act and certain parts of The Mining Act;

(e) In-depth analysis of the existing tax systems to develop a more effective mineral taxation policy;

(f) Economic studies of metal and mineral markets and factors affecting Ontario's mineral output;

(g) Federal-Provincial liaison on mineral resources problems;

(h) Determination of an inventory of the Province's mineral resources, commodity by commodity, and commercially viable ore reserves;

(i) Continuing analysis of the mineral reserves position against present and projected world supply and demand for minerals;

(j) In-depth studies of mining and exploration company decision-making processes;

(k) Preparation of plans to stimulate exploration for, and development of, mineral resources in Ontario; and

(l) Studies on economic behaviour of multi-national mineral resources companies.

Metallic Minerals Section

The objectives of the Section are 1) to provide effective metallic mineral policy options for the Division of Mines based upon in-depth research on a commodity or topical basis, 2) to monitor metal market trends as well as technological progress in the mineral sector and, 3) to monitor policy developments in other jurisdictions with respect to their anticipated impact on Ontario metal mining and processing.

On a commodity basis, a study entitled "Towards a Zinc Policy for the Province of Ontario" was completed and published as a policy background paper in December, 1976. Work on the revision and updating of the 1974 policy background paper on iron ore continued and will be completed by fall, 1977. A similar study on nickel was initiated before the end of the year. Due to the size and complexity of the subject, completion is expected in 1978.

The second stage of the development of an economic model of the mineral industry of Ontario was completed, and a summary report was released for publication in the Annual Review issue of *The Northern Miner*. The study in its entirety is being readied for publication late in 1977. A study of the economic growth debate in its relevance for Ontario mining has been carried to the same stage.

Studies of different aspects of the problems of Ontario's declining gold mining industry were carried out to provide background material for responses to a wide variety of submissions from interested parties.

In the area of energy resources, the Section continued to evaluate developments concerning the Onakawana lignite deposits and also detailed one mining engineer to co-operate with Ministry of Energy personnel in monitoring Ontario's stake in Syncrude.

In conjunction with Geology Branch staff, the Section completed work on an inventory of the zinc reserves of the Province and commenced inventory studies of its nickel reserves. The uranium reserves inventory was updated.

Although this mineral inventory work develops a crucial part of the data base necessary for the development of mineral policy options, publication is not possible due to the confidential nature of the company data involved.

Liaison with organs of the Federal government, of the Provincial governments and of some foreign jurisdictions, as well as with mining company representatives, continued on matters pertaining to Ontario Mineral Policy and mineral industry matters of mutual concern.

There was also continuing involvement in the issues evolving in connection with the administration of The Mining Tax Act and The Ontario Mining Act.

Industrial Minerals Section

The Section has two major functions:

1. Providing the input necessary to fulfill the role of the Branch in presenting industrial (non-metallic) mineral policy options for the Province; and
2. Administering The Pits and Quarries Control Act.

The policy function will be developed on a progressive basis to deal in turn with each industrial mineral and rock commodity by implementing the processes outlined as major areas of responsibility for the Branch.

The Section's function in administration of The Pits and Quarries Control Act involves a dual role. On the one hand, consultation and guidance are provided to the Ministry's field offices which, through their pits and quarries inspectors, are responsible for implementing the requirements of the Act. On the other hand, the Section has been processing applications for pit and quarry licences forwarded from the field offices for the Minister's decision.

As of June, 1975, and December, 1976, respectively, the Ministry's Central and Southwestern Regions assumed the latter responsibility in keeping with Government's plans for decentralization of operations.

Three regional Mineral Aggregate Studies have been contracted out to consultants and completed. Those for the Central and Eastern Regions are published and available and the Southwestern study will be available early in 1977.

As of August 27, 1976, there were 278 geographic townships designated under the Act. Understandably, the majority of staff time has been expended in 1) liaison with inspectors, 2) processing the many applications, 3) explaining the Act and its purposes to applicants in personal and telephone interviews, and 4) participating in various relevant meetings.

A total of 1,578 Pits and Quarries Control Act licences have been issued in the designated areas.

Mining Tax Assessment Section

The Section experienced a major reorganization during 1975-6 to cope with the increased complexity of the Act, following the 1975 and 1976 amendments to the statute.

The Section provides draft mining tax assessments and financial data for the Mine Assessor to assist him in the administration of The Mining Tax Act and determination of the tax due.

At the end of last year, the Section staff consisted of one trained assistant mine assessor and an analyst. This staff has been augmented in 1976 by a section supervisor, two assistant mine assessors under training, and an assistant assessor under contract.

Mining tax returns were received for taxation year 1975 indicating estimated liability under the Act for 1975 operations of more than $50,000,000.

Petroleum Resources Section

The Section is responsible for all the activities associated with the oil and gas exploration, drilling and production industry in Ontario. These functions include the conservation and development of Ontario's petroleum resources in conjunction with acceptable environmental and safety standards.

Geological and engineering data are collected on all wells drilled in the Province and consolidated in the form of publications and maps which are made available to the public to encourage the equitable development of Ontario's petroleum resources.

The Section's staff includes qualified geologists, reservoir engineers and resource officers. As an integrated regulatory and scientific agency, it is able to advise Government on all problems arising from legislation and the wide variety of technical and scientific problems related to oil and gas exploration and development in Ontario and other areas of Canada.

The Section, operating under the authority of The Petroleum Resources Act and Regulations made thereunder, requires the submission of all information collected in the drilling and production of wells. This information is submitted in the form of core and drill cutting samples, engineering and geological completion reports, fluid analyses, monthly and annual production reports, and a variety of reports required of the various licences issued.

All data is validated by the appropriate regional resource officer and interpreted and transcribed by geologists and engineers into readily accessible forms by way of hard copy documents, microfilm, and computer output for both internal and public use.

Through its drafting unit, the Section compiles and constructs 15-minute quadrant maps for southwestern Ontario showing all oil and gas wells and regulation spacing areas. The maps are updated weekly and made available to the public.

The geological well samples are washed, bottled and stored in the repository facilities located in London. Here they are made available to geologists and engineers from industry and universities for research studies.

Under the authority of The Mining Act and Ontario Regulation 546/71, The Section regulates the disposition of mineral rights within Lake Erie. To the end of 1975 the Section had issued 2,523,609 acres under Licence of Occupation and 277,286 acres under production leases to a total of seven operators.

During 1975 a total of 162 wells were drilled in Ontario, including 66 wells in Lake Erie. Off-shore operations are closely scrutinized by the resource officer staff normally operating on a 24-hour basis and staying aboard the drilling vessel during critical phases of the operation.

Since 1858 more than 100,000 oil and gas wells have been drilled in Ontario, and many have never been properly plugged. As a result the Section, through Government funding, administers the plugging of hazardous wells on a priority basis, and in turn works closely with T.E.I.G.A. and other agencies in this regard.

Mineral Economics Section

The Section has been established with elements of the former Commodity Analysis Section. Its responsibilities are as follows:

1. Economic and statistical research as an input to the development of mineral policy options;
2. Development and maintenance of an economic and mineral commodity data base;
3. Annual survey and preparation of annual reports on
   (a) Mineral Industry Statistics, and
   (b) Mining Accident Statistics and Employment;
4. Collection and analysis of national and international data on all metals and minerals commodities, prices, markets, consumption trends, tariffs, duties and export-import restrictions;
5. Studies on economic impact of mineral policies in other provinces;
6. Consulting services in the field of mineral statistics to other branches of the Ministry, other Ministries and the interested public, and
7. Administration of Part X — Refinery Provisions of The Mining Act.

In 1975-6, preparatory work was undertaken on the publication of the report on Ontario's Mineral Industry Statistics for 1971-1973. The information and the statistical data previously published in these reports have been made available to the interested public on an open file. By the end of the year the open data file on mineral industry operations was completed for the years 1973 and 1974 and the statistical data on mineral production of Ontario were tabulated for 1972 and 1973.

The Section is responsible for preparation of an annual bulletin on mining accident statistics and employment.

In addition to the statistical breakdown of data by major economic areas, Northwestern, Northeastern and Southern Ontario, as well as by major mining centres, the Section also tabulated in 1975 the values of mineral output for each of the newly established Natural Resource regions.

The Section provided services in the field of mineral statistics to the staff of the Ministry of Natural Resources, other government agencies and the interested public.

Economic and statistical research on mineral resources was reoriented from pure research and assembly to applied research, targeted to output requirements.

Mines Engineering Branch

Mines Engineering Branch was transferred to the Occupational Health and Safety Division of the Ministry of Labour on December 17, 1976. The report on the Branch for the past fiscal year is included in the Annual Report of the Minister of Labour.

Geological Branch

Geological Branch provides information on the geology and mineral resources of Ontario to encourage industry exploration, to provide a basis for land-use planning, and to aid in the development of non-renewable resource policies.

Geological, geophysical and geochemical surveys identify favorable locations for mineral and aggregate deposits and provide increased knowledge and understanding of the geological history of Ontario. Existing data on mineral deposits are being compiled, and new studies have been initiated. Educational programs and published reports and maps are available to the public. Additional scientific contributions are made by the presentation of papers and field trips at geoscience conventions.

The Branch administers the Mineral Exploration Assistance Program (MEAP) whereby the Government reimburses an individual or company one-third of the cost of an approved exploration expenditure (maximum $100,000) in any of six designated areas.

Precambrian Geology Section

During the summer of 1976, 22 field parties undertook interpretive mapping of rock formations of the Precambrian Shield. A total of 1,150 square miles was mapped at a scale of one inch to one-quarter mile for publication at one inch to one-half mile. Six reconnaissance and compilation projects covering 1,000 square miles were carried out for publication at one inch to one mile.

Operation Kenora-Ear Falls, a helicopter supported reconnaissance project, covered approximately 3,000 square miles for publication at one inch to four miles. Three compilation sheets (one inch to four miles) were in preparation. On the basis of field area location, the geologists of the Section are divided into North Archean, Central Archean, South Archean and Proterozoic mapping groups.

Phanerozoic Geology Section

The Section is responsible for the survey and analysis of post-Precambrian soil and rock materials in Ontario. Major thrusts are the stratigraphic mapping of Paleozoic, Mesozoic and Quaternary age sediments and the inventory of mineral aggregates. An important role is to provide information to, and liaise with, municipalities for aggregate resource planning.

During the 1976 field season, seven field parties were operational in northern and southern Ontario. Surveys of Quaternary geology were carried out near Thunder Bay, at Sault Ste. Marie, and in the Tillsonburg, Goderich-Seaforth, and Chesley-Tiverton areas of southern Ontario. Paleozoic mapping was carried out in the Cambridge-Simcoe and Woodstock-Grand Bend areas.

A reconnaissance inventory of sand and gravel resources was carried out in much of northwestern Ontario, and more detailed studies were made of aggregates in several townships in Grey, Bruce and Huron Counties. The Section began a program to prepare detailed reports on mineral aggregates for all townships designated under The Pits and Quarries Act (1971).

Geophysics/Geochemistry Section

Geophysical surveys carried out in 1976 included a gravity survey in the Red Lake area. Geochemical-geological investigations of the relationships between massive sulphide deposits and their volcanic host rocks were conducted in the Confederation Lake and Red Lake areas with Mineral Deposits Section.

The Section was responsible for the planning and implementation at the provincial level of a reconnaissance airborne radiometric survey in the Kenora-Deer Lake area and a regional lake-sediment geochemical survey in the Pembroke-Kingston area. These surveys are part of the Federal-Provincial Uranium Reconnaissance Program to provide information for exploration and assessment of uranium potential. Development of computer-based techniques for processing and interpretation of geoscience data was continued.

Mineral Deposits Section

The Section studies deposits of both metallic and nonmetallic minerals, their distribution, geology, reserves and potential. An important role is to provide reserve data and resource potential estimates for use in government planning, particularly for land use, parks and transportation corridors, and as background for studies by Mineral Resources Branch.

With Mineral Resources Branch, the Section cooperated in the National Uranium Reserves and Resources Appraisal Program and a zinc-copper resources inventory of Ontario. A two-year provincial study of nickel-copper resources was initiated.

Other studies included metal distribution maps for gold, silver, basemetals, and molybdenum; a series of mineral potential maps to aid in large-scale regional planning; a study of the nickel deposits of the Timmins area; a peat study in the Thunder Bay-Ignace area; and a revision of silica and marble deposits. In addition, many producing mines and exploration sites were visited on a routine basis.

Mineral Exploration Assistance Program

Government payments under the Mineral Exploration Assistance Program (MEAP) for the fiscal year were $403,531 with a total government expenditure in the past five years of $2,101,992. The six designated areas are in eastern Ontario, Red Lake, Atikokan, Geraldton-Beardmore, Kirkland Lake and Cobalt-Gowganda. Open File Report 5230 covers MEAP to March 31, 1977.

Geochronology Laboratory

Geological Branch, in conjunction with the Department of Mineralogy and Geology, Royal Ontario Museum, established a geochronology laboratory at the Museum. This facility is providing the absolute radiometric ages necessary for unravelling the geological history of Ontario's Precambrian Shield and its mineral deposits. Geological Branch will conduct a long-term program of radiometric age investigations with emphasis on mineralized areas such as Early Precambrian volcanic belts and on geological problems related to the formation of ore deposits.

Renfrew-Pembroke Program

A four-year mineral exploration incentives program in the Renfrew-Pembroke region was initiated in September, 1976, with funding from the Ministry of Treasury, Economics and Intergovernmental Affairs. This program is designed to renew mineral industry interest in the area by supplying information on basic geology and its relation to the known mineral deposits, and by locating areas of highest potential for each of the commodities likely to be found. Three major project phases were begun to evaluate the potential of carbonate rocks, the potential for precious and base metals, and the potential for uranium deposits, particularly of the Bancroft and Sharbot Lake types.

Regional and Resident Geological Program

Regional and Resident Geologists' offices were maintained in the following centres: Kenora, Red Lake, Sioux Lookout, Thunder Bay, Sault Ste. Marie, Sudbury, Timmins, Kirkland Lake, Huntsville, Kemptville, Richmond Hill and London.

The principal function of Regional and Resident Geologists is to provide consultative service to government, industry and public on the geology and mineral deposits of the Province. In carrying out this function, they conducted visits on a regular basis to operating mines and both active and inactive prospects. They provided geoscience data for a variety of land planning functions.

They also undertook a variety of mapping projects and specific studies, including an examination of gold deposits associated with carbonate rocks in the Timmins area, and slope stability and hazard land studies in the Ottawa-Carleton area.

Geoservices Section

The Section provides a support and service function to Ministry geoscientists, management and public. Five sub-sections are formed according to functional responsibilities.

Scientific Review Office is responsible for the scientific review, editing and publication of all geoscience reports and preliminary maps. The following were printed during the year:

Geoscience Reports, Geoscience Studies	19
Open File Reports	49
Miscellaneous Papers, Miscellaneous Publications	10
Coloured Maps (cartography by Division of Lands)	35
Preliminary Maps	84

In addition, 32 reports were in progress and under review, and several hundred illustrations were produced by the drafting unit.

Geoscience Data Centre performs tasks related to the gathering, research, compilation and computer processing of geoscience data on mineral deposits of Ontario; indexes publications released by Geological Branch and reports submitted for assessment work credit; and within its means investigates and improves upon existing data handling systems.

During the year, 1,300 Branch publications, MEAP reports and assessment work reports were indexed for computerized storage in the Ontario Index to Geoscience Data. Several computer retrievals were made for Branch geoscientists and a Township and NTS Index to Ontario Geoscience Reports was released as an Open File Report. On-line access facilities to the Ontario Index to Geoscience Data and to commercially-based bibliographic files such as GeoRef are now provided by the Centre.

The Centre updated or compiled 120 Mineral Deposits Records for uranium deposits and 750 records for iron deposits. In co-operation with Mineral Deposits Section, work has been started on the creation of two computer-based files: one containing data on all Ontario's iron deposits and the other including geological data on diamond drill holes located in the Elliot Lake area.

Geoscience Information Office conducts and organizes classes of instruction in geology and mineral exploration, answers geological inquiries from the public, and prepares or assists in the production of popular brochures and guidebooks on the geology of Ontario. A number of mineral education courses, including two field courses and several field trips, were conducted, and during the summer half-day geological talks were arranged for Junior Ranger camps.

During the year, a revised Practical Fieldwork workbook was issued for use in Geological Branch's Practical Fieldwork Course. The popular brochure "All that glisters . . . " and the booklet "Rocks and Minerals Information" were also revised and published.

Assessment Files Research Office maintains, for public use, a library containing all technical surveys filed for assessment credit. In addition, prospectuses, summary reports from the Ontario Securities Commission and technical data filed in accordance with the Mineral Exploration Assistance Program (MEAP) were also filed.

Technical Services Office arranges for the requisitioning, maintenance and cataloguing of all field equipment, vehicles, furniture and scientific instruments for Geological Branch.

Mineral Research Branch

The function of the Branch is to provide scientific support and technical services for Division of Mines programs. The services include direct assistance to the private sector as well as in-house activities.

The Toronto and Cobalt laboratories avoid competition with private laboratories. Fees are charged for outside work. The coupon system for free work to prospectors came under scrutiny during the year.

The first phase of work on the Renfrew-Pembroke project was carried out.

Temiskaming Testing Laboratory (Cobalt) Laboratory

The primary functions of the Laboratory are the bulk sampling of silver-cobalt ores and concentrates and the determination of silver, cobalt, nickel and copper so that the market value of mine shipments can be established. While silver ores are given priority, the mill is available for the processing of other rocks, ores, and concentrates.

During the year, services to industry were expanded by undertaking to car sample low-grade concentrates in addition to the usual machine sampling of high-grade. Due to low shipments from the mines and the emphasis on low-grade concentrates, cash revenue suffered a further decline. Cost cutting measures were taken.

Toronto Laboratory — Analytical Section

This Section is equipped with sophisticated equipment for the inorganic analysis of geological materials. A large program of complete rock analysis was carried out in response to the increasing importance of petrochemistry in the correlation and interpretation of rock types in geological mapping and field work. Productivity and quality of results were drastically improved by the implementation of new automated and computerized x-ray spectrographic equipment.

Analytical work is a major component of the Division geochemical program and therefore accounts for a large proportion of the activity of the Section. Development work and methods research is necessary to meet program needs. This centered primarily on arsenic, strontium and cesium.

Participation in standard reference material analysis was continued in co-operation with CANMET, Ministry of the Environment, and the Canada Centre for Inland Waters.

Mineral Sciences Section (Toronto)

A similar role is played by this Section with respect to mineralogy, petrology and physical testing. Examinations, consultations, and projects for the public were significant. The Section contributes in various ways to the rock analysis program, mainly through the maintenance of the rock and thin section library of the Division and the development and implementation of a computerized norm program for all analyzed samples. This is useful to geologists for the interpretation of data.

Highlights for the year were initiation of special tests for sensitive clays, a study of Ontario peat, and special studies of alkaline rocks, carbonatites and marbles.

In support of the respiratory dust program of Mines Engineering Branch to monitor quartz dust by means of personal gravimetric samplers, an automated and computerized facility has been set up to analyze dust collected by the Government and by the mines. This activity is now fully implemented. Responsibility for standardizing and approving the personal gravimetric samplers, themselves, and the distribution of silver filters was also undertaken.

Division of Fish and Wildlife

Fisheries Branch

Fisheries Branch was established on April 1, 1976, when the Commercial Fish Section of the former Commercial Fish and Fur Branch was joined with the former Sport Fisheries Branch.

The objective of Fisheries Branch is to maintain and enhance fish populations of Ontario as a stable base upon which recreational and economic benefits are provided to the people of this Province.

Fish production potentials of many Ontario lakes have been seriously reduced and several fish populations have lost their stability during recent decades. General stresses acting on fish populations are excessive exploitation, degradation of habitat and water quality (by land and water based developments and by nutrients and/or contaminants), and side effects of newly introduced or invading species such as smelt and sea lamprey.

Recovery of the former fish production potential of Ontario waters requires a more intensive degree of fisheries management effort throughout the Province. This includes continuing international participation in the Great Lakes Fishery Commission program and an increased fisheries role in water-quality management programs co-ordinated by the International Joint Commission.

The series of strategies leading to effective management of Ontario fisheries as recommended by a joint federal-provincial team were discussed with advisory groups and our field staff during the past year. Final recommendations for policies were published in the fourth report, ''Federal-Provincial Strategic Planning for Ontario Fisheries, Management Strategies for the 1980's''.

Commercial Fishery

In 1976, landings of most species remained comparable to those of previous years although there were some exceptions. As a result of management restrictions, catches of yellow perch in Lake Erie declined by 43 per cent from 1975 and this accounted for a 35 per cent reduction in the provincial harvest of this species.

Landings of catfish in Lake Ontario, Lake Erie and southern inland waters declined by 49 per cent from 1975. Catches of yellow pickerel from Lake Erie approximately doubled in 1976.

The 1976 commercial harvest of all fish species from Ontario waters of 45.1 million pounds was similar to the 45.4 million pounds netted in 1975. Strengthening prices for most fish species raised ex-vessel values to $12.5 million from $11.1 million in 1975. Bait-fish catches were relatively constant but fishermen had higher financial returns due to increased prices.

Employment in both fisheries was up slightly from the estimated 5,500 persons reported in 1975. A reported $21.7 million was invested in the food-fishery.

The Freight Equalization Program continued, under a revised rate schedule, to assist fishermen in remote areas of the Province to meet high freight costs. Harvests of otherwise under-used fish species in more accessible fisheries in northwestern Ontario were also stimulated under this program.

Under the Fisheries Industrial Development Program, otter trawling was initiated in Lake Nipissing to explore alternative techniques to harvest commercial species and, in particular, whitefish.

An estimated 700,000 migrant eels passed into Lake Ontario via an eel ladder at the Moses-Saunders Dam. Approximately 10,000 upstream migrants were tagged to assess the long-range value of providing this access.

Demonstrations of techniques and equipment to bait-fishermen were continued. This program was expanded in northwestern Ontario to include demonstrations of two temperature controlled bait-fish tanks, one of which was permanent, the other portable.

The feasibility of constructing large, monofilament-mesh trap nets was examined. This study was conducted in anticipation of further exploration and demonstration of effective impounding gear for lakes in northwestern Ontario.

Fish Culture

The Fish Culture Section is responsible for planning and co-ordinating production of eggs and young fish to be stocked in selected Ontario waters. In 1976, approximately 8.1 million eggs and 7.9 million fish were stocked. Three per cent of the eggs and 36 per cent of the fish were released into the Great Lakes and their tributaries. The remaining eggs and fish were stocked in numerous inland waters.

An estimated 95 per cent of all eggs planted were yellow pickerel. Approximately 78 per cent of all fish stocked were salmonids including brook trout (20%), lake trout (30%), rainbow trout (16%), splake (9%), and coho salmon (3%). The remaining 22 per cent included maskinonge (17%), yellow pickerel (2%), largemouth bass (2%), and smallmouth bass (1%).

Development of the fish culture data base is continuing. When fully operational, the system will facilitate the optimization of various aspects of the fish culture program.

New draft guidelines for fish stocking were formulated in 1976 as a result of increased emphasis on policy review and priority setting. General priorities, arranged in descending order of importance, are rehabilitation, maintenance and provision for artificial fishing opportunities.

Construction of the Dorion hatchery sub-station was completed in 1976. This increases the production capability for trout by 500,000 fish annually.

Plans for the renovation of the main hatchery at Dorion were completed and construction is expected to begin in 1977. In 1976, the headwater supply and the hatchery facility were treated with a chlorine compound (HTH) to eradicate disease organisms.

Plans for the construction of the proposed new Lennox fish hatchery in southeastern Ontario were deferred because of provincial monetary constraints.

An agreement between the Ministry and the University of Guelph permitted the continuation of disease diagnostic services and fish nutrition studies. Diets continued to be modified, upgraded and tested under actual production conditions. For example, the effects of altered diets on splake and lake trout at Chatsworth hatchery were studied.

Fish Habitat (Environmental) Dynamics

Ontario waters undergo dynamic seasonal changes which are normal for aquatic life. Modern society's activities have often had detrimental effects on fish habitat. When this occurs, it reduces the ability of the habitat to produce fish. Considerable effort is required to avoid or minimize such detrimental changes as well as to recoup low-quality habitat.

The study in conjunction with the Ministry of Transportation and Communications on the effects of highway construction on a brook trout stream (Galt Creek) was completed and should be published shortly. An annotated bibliography on the effects of roads on aquatic biota was prepared as part of this study.

The co-operative study at Nanticoke, a special arrangement among Ontario Hydro, Stelco, Texaco and the Ministries of the Environment and Natural Resources, will soon be entering its seventh year. In this project, the effects of industrialization on that part of Lake Erie adjacent to Nanticoke are being assessed.

The pilot study to reclaim degraded fish habitat on Wilmot Creek continued. Bank stabilization, fencing, stream-side planting and other in-stream works have been designed to improve the ability of this former Atlantic salmon stream to produce trout. The results of this reclamation project will be applied to similar streams in Ontario.

In-stream dams continue to limit the production of natural salmonid populations. Passage of spawning fish over these obstacles might be accomplished by constructing fishways. More than 2,500 rainbow trout, as well as numerous brown trout, ascended fishways on the Saugeen and Ganaraska Rivers this year. A fishway is presently being constructed on the Lucknow River at Port Albert and a fish lock on the Beaver River at Thornbury is being planned. The benefits of trucking mature fish above barriers on streams, where fishways are not practical, are being considered.

In the continuing inventory program for lakes and streams, 507 lakes (514,598 acres) and 2,217 miles of streams were examined in 1976. A total of 546 fishing maps have been prepared for public use and another 24 are in preparation.

Contaminants in fish continue to be a problem in Ontario waters. A major effort was made in 1976 to determine the extent of the problem and to provide advice to the public concerning the consumption of fish. Approximately 7,000 fish from some 200 water bodies were collected for contaminant analysis.

We are co-operating with the Ministries of Health, Industry and Tourism, Labour and the Environment in the preparation of a contaminants information package which should be ready for public distribution in July, 1977. This package will provide detailed results of the fish testing program and a comprehensive discussion of health implications of contaminants.

A program in co-operation with the International Joint Commission and Fisheries and the Environment Canada was developed for monitoring contaminants in the lower Great Lakes to determine long-term trends of contamination in these ecosystems.

Fisheries Policy Development

The Fisheries Policy Development Section, formerly the Planning Section, is responsible for establishing a planning framework for Ontario fisheries resources and for developing policies to manage these resources.

Input is provided by the Section to strategic land use plans, municipal plans, lakeshore development studies and other planning activities within and outside the Ministry of Natural Resources. This input ensures that fisheries concerns are considered and adequately discussed at the planning stage.

Work is continuing on the development of refined methods for calculating potential fish yields from lakes. This information is essential for managing various water bodies in Ontario.

The number of lakes in Ontario is estimated at 396,792 according to a recently-completed study in which water bodies were counted and measured from topographic maps. The publication, "Counts and measurements of Ontario lakes", will be available shortly.

Data analyses from the joint federal-provincial angler survey of residents and non-residents continued. Results from this survey will provide information on the extent and location of sport fishing participation in Ontario, user characteristics, angler preferences, expenditures related to sport fishing, and limited harvest data.

A package of 96 boating restriction regulations pertaining to Ontario was submitted to the federal government for approval. These regulations were passed by legislation under the Canada Shipping Act. A brochure outlining these regulations is being prepared and will be available shortly.

Liaison between the Section (representing Ontario) and the federal government for small craft harbour development continued via the Inter-Ministerial Committee on Great Lakes Access.

Fisheries Services

Fisheries Services Section is responsible for developing and carrying out programs relating to data processing, information, training and extension, the preparation of legislation, and the printing of fisheries regulations.

Sales of all non-resident angling licences decreased significantly in 1976. Seasonal and three-day licence sales dropped 2.9 and 3.4 per cent respectively. Organized camp licences decreased from 5,810 in 1975 to 5,663 in 1976, a drop of 2.5 per cent. The sale of non-resident smelt licences, which includes bow-and-arrow fishing for carp, declined sharply by 12.4 per cent.

The Canadian resident angling licence for non-residents of Ontario continued in popularity and sales rose by 10 per cent in 1976.

The Ontario Fisheries Information System (OFIS) has been developed to the point where the Hatchery Production and Costing data base, the Commercial Fish data base and the Creel Survey data base are all useful and in regular use.

The Fisheries Assessment data base is being tested with a pilot project which is the analysis of a large body of data collected on the Bay of Quinte.

While the development of the data bases within OFIS is well advanced, much further consolidation and integration of the system will be necessary. The application of modern data base techniques to fisheries problems is new. The experience gained is expected to lead to further evolution of OFIS and of fisheries management.

Population Dynamics

The Population Dynamics Section provides advice and consulting services to field staff involved in fisheries projects and particularly those pertaining to salmonid communities. The Section continued to participate in the Lake Huron and Lake Superior management committees in 1976. The harvest component of OFIS continued to be developed.

The Section assisted in co-ordinating the International Percid Symposium (PERCIS) held in Ontario in 1976. Selected papers presented at the symposium were reviewed by the Section.

Data entry on cassette tapes for a geographical atlas of lake trout waters was initiated. The Section, in co-operation with Fish and Wildlife Research Branch, published Research Report No. 97, "The distribution and characteristics of Ontario lake trout lakes".

Wildlife Branch

The Branch objective is to manage, enhance and interpret wildlife populations and habitats to provide optimum wildlife-based recreation opportunities for the residents of Ontario, and a continuous contribution to tourism and its related industries. Much effort is directed to the maintenance and improvement of wildlife habitat as it is habitat which determines the potential in wildlife numbers.

On April 1, 1976, the Fur Management and Resource Development programs were transferred to Wildlife Branch from the former Commercial Fish and Fur Branch.

Big Game Management

The moose population remains fairly stable. The rate of decline of the moose herd in accessible areas appears to be slowing. Moose populations in areas not easily accessible to hunters appear to be holding steady. Working with local populations of animals is important to implement a sound provincial moose management program.

The Ontaro Moose Council was established in 1976-7. The Council is now co-ordinating the provincial moose management program.

The moose management program is described by seven management items as follows: (1) wildlife management unit data-book; (2) moose population inventory; (3) moose habitat inventory; (4) moose harvest assessment; (5) moose habitat management; (6) moose co-operative research project; and (7) provincial moose management demonstration area.

Standards and guidelines have been developed for W.M.U. data-book, moose population inventory and moose habitat inventory (experimental). Development of guidelines for the remaining four management items continues.

The number of deer in the forested areas of the northwest fluctuates with winter conditions, and that in the forested areas south of the French and Mattawa Rivers declines with decreasing habitat quality. In the agricultural south, the number of deer is holding or increasing. Habitat management is required for an abundance of deer. It is concentrated on increasing the winter food supply by cutting hardwood near conifer cover.

Black bear numbers, though difficult to assess, are believed to be holding constant. Nuisance bear are trapped and released elsewhere whenever possible, or destroyed if necessary. Hunters take between 3,000 and 4,000 bears per year, and the number of bear hunters is increasing.

Timber wolf and coyote populations throughout the province remained the same during the past year.

Predation on domestic livestock was not as great as in 1975. A total of 1,169 domestic animals was reportedly killed by wolves and black bears, approximately 10 per cent less than the number reported in 1975. Sheep and lambs accounted for 1,057 of the total kill.

Ministry predator control programs resulted in the removal of 250 predators, including 46 timber wolves, 144 coyotes and 51 black bears.

Upland Game Management

Development of updated policy options for the management of small-game species in Ontario was initiated and is under further study.

All small-game species appeared to maintain healthy populations. Despite several severe snowstorms, initial reports suggest that there was minimal extra mortality in such upland game birds as pheasant, bobwhite and Hungarian partridge. European hare, cottontail rabbit and, especially, snowshoe hare occurred in favorable numbers. Ruffed grouse continued to remain at fairly high population levels in most areas.

Waterfowl Management

A program to establish a wild breeding population of Canada geese in southern Ontario, under way since 1968, has been successful, and it is estimated that 20,000 of these birds now occur in that part of the province as breeders or potential breeders.

Snow goose breeding success in the Northwest Territories is expected to be excellent in 1977 due to the early disappearance of snow cover during the nesting season. Fall populations of the duck species that breed in the Canadian prairie may be somewhat reduced as a result of a persistent drought.

Non-Game Management

This program encompasses endangered and threatened species, urban wildlife, non-game wildlife, and wildlife interpretation outside provincial parks.

Efforts with endangered species over the past year were primarily devoted to the documentation of evidence on the population status of certain species. Eight additional species were designated as endangered under The Endangered Species Act, making a total of twelve now listed.

Field programs undertaken during the year included studies on the blue racer snake, common terns, bald eagle and the West Virginia white butterfly. The white pelican studies continued in the Lake of the Woods.

A policy paper on endangered and threatened species was completed and approved.

Wildlife Branch staff participated in the planning for the central waterfront area of the City of Toronto. This area contains some of the finest wildlife resources on the lower Great Lakes.

Wildlife interpretation weekends were held at Long Point, Presqu'ile, Luther Marsh, and Hawk Cliff near St. Thomas. These events were highly popular with the public.

Wildlife Extension and Provincial Wildlife Areas

Forty-one areas are located throughout southern Ontario to provide wildlife-based recreation on private and public land. Habitat is managed to produce wildlife for viewing, hunting and maintenance of wildlife populations. Interpretive nature trails were constructed on several provincial wildlife areas, including Fingal near Port Stanley and Hoople Creek near Cornwall.

Wildlife Services

Ontario's Conservation Officers are responsible for the enforcement of The Game and Fish Act and various other Acts administered by the Ministry of Natural Resources. They are also appointed as Fishery Officers under the Fisheries Act of Canada and as Game Officers under the Migratory Birds Convention Act of Canada, which authorizes them to enforce these Acts and regulations thereunder on behalf of the Government of Canada.

During the past year, Conservation Officers laid a total of 7,981 informations under these Acts, resulting in convictions in 6,988 of the cases heard by the courts. This was an increase of 22 per cent over the previous year.

Planning

Many kinds of plans, including recreational, forestry, mining, housing and municipal development plans, have been reviewed to ensure that wildlife interests are an integral part of planning. A major project was input to the Niagara Escarpment Planning Area. Environmental impact assessments from many sectors are increasing in number and have been carefully scrutinized with regard to wildlife interests.

Projects for the year consisted of development of a proposed master planning process for wildlife management areas, assembly of a bibliography of effects of development on wetlands, and effects of development and environmental contaminants on wildlife resources in southern Ontario.

Proposals for large-scale extractions of natural resources and other related developments in northern Ontario are being studied to protect wildlife resources and their value to northern residents.

Wildlife Surveys and Records

This office files hunting and non-resident angling licences. Statistics on participation in hunting, including participation rates, hunter success and harvest, and socio-economic characteristics of participants, are obtained through mailed questionnaires. This information supplements data obtained in the field and forms the basis for wildlife management and recreation planning.

Furbearer Management

The harvests of beaver and mink declined for the third consecutive year. In the 1975-6 fur year, 136,856 beaver were harvested and the average pelt value was $21.09, an increase of $3.13 on the year; 14,856 mink were harvested and their pelts averaged $11.34.

Trappers in southern Ontario had stricter fisher quotas in 1975-6 because there was good evidence that the animals were being over-harvested. The catch of fisher was 2,165 animals and their pelts were worth $113.42 on the average. Lynx pelts averaged $231.93 but only 1,151 animals were captured.

Trappers sold 44,223 raccoon in 1975-6 for an average price of $19.04, while hunters sold an additional 21,050 raccoons.

Trappers' workshops were held in many areas of Ontario, and work was started on a standard agenda.

Resource Development (Native People)

The resource development programs assist the native Indian people of Ontario in the utilization of renewable natural resources for their economic benefit. The following projects were carried out during the year under the Federal-Provincial Resource Development Agreement.

Fur. This program provides for the placement of Indian trappers on vacant trapline areas. Aerial surveys are conducted and maps showing live beaver colonies are supplied to the trappers. Transportation of supplies, equipment and furs is also provided.

Commercial Fish. Administrative and operational assistance is provided to native people in the Northwestern Region in their commercial fisheries activities.

Sport Fish. Lake surveys were conducted on seven lakes on the Garden River Reserve to determine their potential for sport fishing. A lake trout and brook trout management proposal was prepared for the development of a sport fishery in these waters.

Tourism. Six goose hunting camps were operated during 1976 by the Indian people along the James Bay and Hudson Bay coast. Two camps were operated solely by native people while four were provided with assistance and supervision by Ministry staff.

Hide Collection. In 1976, successful hunters provided 10,000 moose and deer hides for the native people of Ontario. The continuing success of this program is due to advertisements and hunter contacts made over the years. Presently, there are 4,000 native people involved in the craft program. It contributes significantly to their economy through the sale of handicrafts.

Timber. Assistance was provided to native people in the operation of various timber and lumbering operations, reforestation and regeneration programs. Complete timber management plans were developed for some reserve areas.

Planning. Representatives of Grand Council Treaty Areas #3, #9, Union of Ontario Indians and CORAID attend the Resource Development Committee meetings and assist in planning and determining program priorities. Indian Band Councils are contacted in regard to programs most beneficial to their needs.

Game Management. Studies to determine deer populations, mortality rates and range potential were conducted on the Wikwemikong Reserve on Manitoulin Island at the request of the Band Council. The objective of this program is to provide guidance to the band in the management of deer on the Reserve land.

Fish and Wildlife Research Branch

The objective of the Branch is to undertake or arrange investigative research which will provide the understanding of basic principles related to fish and wildlife resources needed for their optimum scientific management.

In pursuit of this objective, the Branch not only carries out relevant high-quality research and publishes its results in internationally recognized scientific literature but makes its specialized expertise available to all levels of the Ministry to assist policy formulation, program design and the analysis and evaluation of results.

In 1975, the Branch contributed significantly to the Great Lakes Fishery Commission's analyses which led to the liberalization of walleye quotas and introduction of new mesh size regulations for yellow perch on Lake Erie in 1976. Continuing dockside sampling of commercial catches by the Wheatley Research Station, in co-operation with the Lake Erie Fisheries Assessment Unit, will help in evaluating effects of these measures.

The extensive creel census program, begun in 1975 to formulate the relation between fishing pressure and the extent of cottage and other shoreline development on lakes, was continued in 1976. Arrangements were also made to begin a study of the effect on fisheries of littoral zone disturbances which attend such development. Both programs are important contributions to the Lakeshore Capacity Study being carried out co-operatively by the Ministries of Housing, Environment and Natural Resources.

Research on the genetics, physiology, reproduction, growth and survival of hybrid trout is being conducted under both laboratory and field conditions. In the laboratory a new strain is being developed from the highly selected fifth-generation splake and the lake trout. Field tests on this strain show improved survival and longevity without loss of the rapid growth characteristic of the splake.

Besides assessing the results of splake stocking in Lake Huron and adjacent waters, we are continuing to evaluate their sport fisheries potential in northeastern Ontario lakes in co-operation with the regions and districts with encouraging results.

There is a growing feeling that the native fish of our lakes and rivers may be closely adapted genetically to their particular waters, a concept having important implications for hatchery and stocking programs. We will be commencing a program in 1977 to survey the genetic characteristics of different races of brook and lake trout in Ontario as well as naturalized rainbow trout.

At four Great Lakes Research Stations and the Harkness Laboratory in Algonquin Park, numerous investigations are being conducted into the roles of environmental factors and fishing pressure on game and commercial fishes. At Glenora, for example, a Branch scientist is interested in comparing conditions in the Bay of Quinte and adjacent waters before and after the introduction of phosphorus removal to local sewage treatment plants. This is a co-operative program with other Ministries and Queen's University. Special efforts are also being made at all Stations to analyse backlogs of information, using recently acquired data processing facilities. These backlogs constitute unique and much-needed time series data related to fisheries and related factors likely to affect fishes.

In collecting data, fisheries scientists often obtain information of immediate use to local district management staff and they may be advisers to local management committees. They also act as technical representatives of the Ministry on interministerial and federal-provincial committees, the International Joint Commission for Boundary Waters and the Great Lakes Fishery Commission.

Wildlife research in Ontario seeks to fill our knowledge gaps by investigation of behaviour, physiology, reproduction, pathology, population dynamics, and interactions between wildlife and habitat for selected species.

The most extensive studies recently have concerned rabies and means for immunizing wildlife carriers against the disease. A baiting trial over an area of 600 square miles of western Ontario resulted in over 75 per cent of foxes and 40 per cent of skunks being reached with dummy baits. Because this has been the most successful trial to date, and represents a different approach, further research on a different vaccine is now required. In addition, new and valuable information on the movement of foxes and coyotes was gained by radio-tracking, giving greater understanding of these animals and of how rabies may be spread by wandering individuals.

Expansion of black bear research enabled collection of more detailed information. A survey of the prevalence of diseases and parasites in black bears will conclude in 1977 along with detailed study of the life cycle of an important bear parasite of concern to hunters.

Studies of mineral nutrition of moose showed that iron and other trace elements are sought by moose in early summer.

An audio-visual presentation, entitled "Deer and Timber — Compatible partners in management," aroused wide interest among both forest and wildlife managers.

Division of Parks

Park Management Branch

The number of campers using Ontario Provincial Parks in 1976 was 1,515,353 and the total visitation was 10,732,666.

The number of Provincial Parks in operation increased from 121 to 122 with the opening of MacGregor Point, a 1,066-acre recreational park situated on Lake Huron, south of Port Elgin, off Highway 21.

A new Provincial Park reserve was designated: Missinaibi River, a link in an historic waterway between Lake Superior and James Bay. The reserve includes all Crown lands for 400 feet on both sides of the river for a length of 265 miles.

Many existing park facilities were upgraded with improvements to water, sewage, shower and electrical systems.

Visitor Services — Interpretive Program

During the year 1.5 million park visitors attended museums, conducted trips, self-guiding trails, demonstrations and other special events to learn more about Ontario's parks.

The public information program was upgraded with a new Provincial Park brochure and a new series of park leaflets. The audio-visual unit produced several new shows, one of which won an international award for excellence.

The Regions embarked on a major effort to re-align and upgrade staff-organized programs. The first effects of this will be seen in 1977.

Winter Parks

During the winter of 1976-7, four parks were open for winter day and overnight use: Arrowhead, near Huntsville; Sibbald Point, on Lake Simcoe; the Pinery, on Lake Huron; and Rondeau, on Lake Erie. Winter facilities at these parks included snowplowed roads and campsites, heated washrooms with hot water, centrally located drinking water, fuelwood supply, garbage disposal and electrical outlets. Regular fees were charged.

Bronte Creek, midway between Hamilton and Toronto, was open for winter day-use in 1976. Facilities included an artificial ice rink, a toboggan hill, groomed cross-country ski trails, children's farm activities and heated washrooms.

Ski-tows were operated at the Pinery and Remi Lake Provincial Parks. Many other parks were used informally for activities such as snowshoeing, cross-country skiing and tobogganing.

Winter Trails

Snowmobiling was permitted in selected provincial parks on 200 miles of marked trails and 700 miles of park roads. In addition, 600 miles of cross-country snowmachine trails were operated on public lands in the province.

The winter trail maintenance program, introduced in 1975, was continued in 1976 with funding of $350,000 to assist snowmobile clubs, cross-country ski clubs, municipalities and conservation authorities to improve the grooming of 7,000 miles of trails across the province.

Access Points

Approximately 1,400 access points with parking areas and boat launch ramps were maintained to provide boaters with access to lakes and rivers.

Interior Camping and Canoe Routes

In 1976, Killarney Provincial Park introduced interior camping permits to protect areas from over-use and to preserve the quality of the recreational experience for wilderness hiking and canoeing.

New regulations were passed for Algonquin Provincial Park. An access-point quota system was introduced; a limit of 28 days stay was introduced for interior use; and a limit of nine persons per interior campsite was established.

Approximately 100,000 visitors entered Algonquin, Killarney and Quetico Provincial Parks for interior canoe camping and hiking.

Parks Leased to Private Operators

Inwood, an 81-acre recreational park situated west of Thunder Bay on Highway No. 17, and Sturgeon Bay, a 35-acre recreational park located north of Parry Sound on Highway No. 69, were made available for lease by private operators. Leases were tendered for a one-year term in 1976-7 with the option of a one-year renewal in 1977. Facilities and fees were maintained as in all other provincial parks. The results of this experiment in the leasing of provincial parks will be assessed after the two-year trial period.

Park Planning Branch

Provincial Parks Policy and Park Classification

Significant progress was made on the development of a detailed policy statement designed to direct future growth and development of the Provincial Parks system.

Detailed planning and management policies for the various classes of Provincial Parks will accompany the policy statement. These revisions to the 1967 park classification and zoning scheme were refined during the year on the basis of comments received on a preliminary draft circulated in 1975.

Park User Survey

The park user survey program, initiated in 1974, continued during the 1976 season with surveys of visitors in 19 parks. The purpose of the program is to provide information vital to the planning and management of the parks. Parks are surveyed on a rotation basis so that most parks are surveyed once every five years.

Waterway Areas

Investigations were undertaken to identify candidate areas for the proposed class of waterway parks.

Nature Reserves

Work continued on the development of systematic frameworks for the definition of significant natural features and environments of the Province. These frameworks will be employed in identifying potential nature reserves and evaluating existing reserves.

Regional Systems Planning

A study was undertaken to define the tasks required for comprehensive planning at a regional level for the Provincial Parks system. The study also made proposals for a planning program to carry out such tasks.

Recreational Land Acquisitions

Work continued on the evaluation of future parkland with emphasis on increased recreational facilities for southern Ontario residents. During the year, 1,557 acres were acquired for parks purposes.

As part of the implementation of the Niagara Escarpment Report, an additional 965 acres were purchased, making a total of 45,135 acres acquired to date. An additional 421 acres of land were purchased at Wasaga Beach.

Master Planning

In response to requests from many interested individuals and organizations concerning the official status of master plans for Provincial Parks, an amendment was made to The Provincial Parks Act in June, 1976. The term "master plan" is now defined in the Act. The amendment also authorizes the Minister of Natural Resources to prepare and approve a master plan for any existing or proposed provincial park as well as carry out periodic reviews and make necessary alterations to an approved master plan.

To date 16 master plans have been approved by the Minister, 14 are pending final review and approval, and 32 others range between initial and advanced stages of preparation. Thus approximately half the provincial parks have master planning projects either completed or under way.

Public participation programs continued for several planning projects such as Rondeau and Wasaga Beach to encourage maximum public involvement in the decision making process.

Site Planning

During the year detailed site plans were produced for 618 approved development projects throughout the Provincial Park system.

Highlights of work during the year included site plans for the new MacGregor Point and Awenda parks as well as redevelopment plans for Wheatley and Cyprus Lake parks. Corridor improvement studies were conducted for the highway landscape through Lake Superior and Algonquin parks.

Provincial Parks Council

The Ontario Provincial Parks Council under the chairmanship of Dr. George Priddle, University of Waterloo, was appointed in October, 1974. Comprising 19 members representing a wide array of recreational backgrounds, the Council's mandate includes monitoring the implementation of the Algonquin Park Master Plan and advising the Minister with respect to the planning, management and development of the Provincial Parks system in relation to changing public needs.

In its First Annual Report to the Minister, the Council made recommendations on a wide variety of topics related to Provincial Parks.

Ontario Trails Council

The Ontario Trails Council, under the chairmanship of Mr. William E. Coates, was activated in September, 1975. The 17-member citizens' group has been given the mandate to prepare policy recommendations on the implementation of a provincial Trails Program.

The Council is holding public meetings across the Province to hear the concerns of interested snowmobilers, horseback riders, cross-country skiers, trail bike riders, bicyclists, snowshoers and canoeists. The Council will present its final recommendations to the Minister in September, 1977.

Conservation Authorities Branch

Since its establishment in 1944, the Branch has supported programs initiated and undertaken for the most part by autonomous, corporate bodies established as Conservation Authorities under The Conservation Authorities Act. The objective of the Branch is to encourage the conservation, development and utilization of water and related land resources by providing policy, funding assistance, and management and planning direction to the Authorities.

There are 38 Authorities that cover most of Ontario south of the Laurentian Shield and a few sections of northern Ontario around the urban centres of North Bay, Sault Ste. Marie, Sudbury, Timmins and Thunder Bay. They each establish and undertake a wide variety of programs to further the conservation, restoration, development and management of the renewable, natural resources of their watershed within the framework of the Act.

The Conservation Authorities Act ensures a provincial-municipal arrangement. The membership of each Authority includes representatives of all municipalities situated wholly or partially within the watershed and up to three members appointed by the Province. Consequently, the initiative and sense of responsibility of the local communities are combined with the technical and financial resources of the Province to protect and develop the watersheds of Ontario.

A Conservation Authority is formed as a result of a resolution from two or more municipal councils that petition the Minister of Natural Resources to convene a meeting for that purpose. If the vote of the municipal representatives is favorable, the Authority is established by an Order-in-Council. The Authority boundaries are then defined on a watershed basis. They may govern a single watershed, such as the Grand River system, or a number of smaller and adjacent watersheds such as the Cataraqui Region.

Conservation Authorities place a particular emphasis on water and related land management. They are also involved with auxiliary programs oriented to land use, forestry, fish and wildlife, outdoor recreation and conservation education.

All programs undertaken by the Authorities must have the approval of the Minister of Natural Resources. Each program involves a wide variety of resource management projects that receive financial assistance. The provincial grants, which are provided through the Conservation Authorities Branch, generally amount to 50 per cent of the cost of an approved project but higher rates are applied for certain types of projects. In some water management projects the federal government may also participate. The Authority raises its share of the funding by levying its member municipalities and from other sources.

Ten Authorities employ a general manager or director of operations to supervise their respective programs under the direction of a chairman. Resource managers are supplied by the Province in 24 Authorities, including three instances where the services of a manager are shared by two Authorities.

Conservation Authorities relate to the Ministry's field organization at the regional level. Four regions have program supervisors to assist the Authorities in planning and implementing their resource management programs.

Administration

One of the major changes during the past fiscal year was the revision and publication of a new *Policy, Procedure and Information Manual* which became effective in January, 1977. The manual serves as a guide for the Authorities in setting up administration and accounting procedures, in developing plans and programs, and in applying for and claiming funds from the Province. It identifies the three major programs of administration, water and related land management, and conservation and recreation land management.

A new grant structure was proposed by the Minister of Natural Resources to the Chairmen's Committee of Ontario Conservation Authorities on November 16, 1976, to update the formula to reflect current priorities. It is presently under review and will become effective in 1978.

The Maitland Valley Conservation Authority, established in 1951, was enlarged April 15, 1976, to include the

Lucknow River watershed and all its tributaries, a number of smaller water courses, and portions of six townships and the Village of Lucknow.

A new joint office building was constructed for the North Grey and Sauble Conservation Authorities at the Inglis Falls Conservation Area just outside Owen Sound.

The Junior Conservation Award Program introduces students between 16 and 18 years of age to a spectrum of conservation values and to technical conservation skills. The 1976 summer program (organized by a co-ordinator) involved 40 students who undertook specific projects proposed by Authorities in five different watersheds.

Under the Experience 76 program, the 1,443 students hired by the Branch and the Conservation Authorities gained valuable insight into resources management by undertaking projects such as the development of nature trails in Conservation Areas, the restoration of historical sites, the removal of debris from water courses, the construction of river-bank retaining walls, and the compilation of wildlife inventories.

Water and Related Land Management

Programs within this section relate to water management and flood control and therefore include projects such as flood plain mapping, environmental assessment, dams, channel improvements, erosion control structures, and water quality monitoring.

A Flood Plain Criteria and Management Evaluation Study was initiated in the spring of 1976 by the Ministries of Housing and Natural Resources to assess the criteria and floodplain management practices in view of increasing land values and urban growth. The study reviews the present floodplain management in Ontario and documents alternative strategies which could be adopted. The summary report and discussion paper will be made available to ministry agencies and the public for review in the early part of the summer of 1977.

The Thames Basin Water Management Study was completed and released. This joint project of the Ministries of the Environment and Natural Resources sets out the water management options for the watershed. A technical committee was appointed to review its recommendations.

The initial draft of a *Watershed Survey* to indicate the water related problems in the Mattagami Region C.A. was completed.

The Essex Region C.A. completed the *Essex Shoreline Study*, a major erosion study which identifies areas of problem erosion along the Essex County shoreline and suggests possible solutions.

The capital development projects which received major funding in 1976 involved nine Authorities. The Cataraqui Region C.A. virtually completed the construction of the Millhaven Dam and Reservoir on Millhaven Creek.

The Grand River C.A. completed construction of the Guelph Dam and Reservoir on the Speed River and it was officially opened in July. Other major projects of this Authority relate to continued land acquisitions in the Everton, the Cambridge-Galt and the Hanlon Creek Valleyland Assemblies, and the completion of a further phase of the Speed River Channel Improvement.

The Halton Region C.A. completed construction on the Hager-Rambo Diversion, the largest single capital development project for the year. Metro Toronto Region C.A. finished another phase of a five-year Erosion Control program in the city for stream and valleyland stabilization and the second year of a five-year Flood Plains Land program to continue the land assembly of valleylands in accordance with the master plan.

Moira River C.A. completed the engineering and began construction of the dam for the Belleville Ice Control.

Nottawasaga Valley C.A. ended the third phase of construction for the Pretty River Dyking, a flood protection project for Collingwood.

Rideau Valley C.A. completed the Brewers Park Dyking for flood control along the Rideau River.

South Nation River C.A. finished construction of the Crysler Dam, a general water control structure on the South Nation River.

St. Clair Region C.A. completed the initial engineering and continued land acquisition for the Wilkesport Dam and Diversion, a flood control measure for Wallaceburg and the lower Sydenham River area.

Other development projects to receive M.N.R. funding included the following: the Glengowan Dam in the Upper Thames C.A. where preliminary engineering was completed and land acquisition began for purposes of flood control and water augmentation; initial land assembly in the Potageville Swamp on the Schomberg River by South Lake Simcoe C.A. to complete the flood protection works in the area; and the preparation and approval of the Bennett-West Davignon Diversion project by the Ministry of Natural Resources in the Sault Ste. Marie Region C.A.

A dyking project involving federal-provincial input is concerned with the protection of valuable agricultural lands by the Lower Thames River, the Essex Region and St. Clair Region Conservation Authorities along the Lower Thames River, Pelee Island, Lake St. Clair and Sydenham River shorelines. This work is to continue next year.

Flood plain mapping was virtually completed in the urban centres and areas of potential development in four of the five northern Authorities.

The Hydrometerological Section of the Branch is concerned with the collection of hydrometric and precipitation data and was involved with flood warnings along the Grand River when a major thunderstorm arose on June 30 in the area of Fergus. Serious flooding occurred along sections of the Grand River and one of its tributaries, the Irvine Creek, but due to an early warning, no lives were lost and property was saved.

The spring of 1977 saw the second most severe flood on record along the Thames River. It was largely controlled by the three major reservoirs in this watershed (Wildwood, Fanshawe and Gordon Pittock) but some flooding did occur in Chatham and smaller urban centres such as St. Mary's and Thamesville. Flooding this spring was also severe in the Saugeen watershed, especially in the town of Paisley as a result of ice jams.

Conservation and Recreation Land Management

This program relates to projects involved with landscape protection, reforestation and woodlot management, improved land use methods, outdoor recreation, information and outdoor education, fish and wildlife inventories, and pollution abatement.

The major capital development project occurred in the Hamilton Region C.A. within the Fifty Mile Point Conservation Area located on the southwest shore of Lake Ontario in Stoney Creek. Planning studies were undertaken for shoreline stabilization in this area.

Five Authorities were involved in waterfront studies to provide planning guidelines and recommendations to improve and maintain the recreational potential of the shoreline.

The Metro Toronto Region C.A. completed the first five-year phase of its *Waterfront Plan* and received Ministry approval for Phase II to continue the planning, development and management of the Lake Ontario waterfront within its area of jurisdiction from 1977 to 1981.

The Essex Region C.A. was involved in the preparation of plans for the *Metro Windsor Waterfront Study*.

The North Grey Region C.A. completed the *Bayshore Development Planning Study* which represents a request from Owen Sound for assistance in planning the waterfront. A five-year program outlining the development phases will be set forth in the near future.

The Sault Ste. Marie Region C.A. completed and published a *Waterfront Development Study* for purposes related to the creation of more public open space and recreational facilities, the preservation of existing natural and cultural features, and the general improvement of the appearance of the waterfront.

The Lakehead Region C.A. completed a final report on the Recreational Concept for the Lakehead Region waterfront. The two last studies will be reviewed in 1977 for final approval by the Ministry.

The North Bay-Mattawa C.A. acquired the Eau Claire Gorge Conservation Area on the Amable Du Fond River. The land was purchased to conserve the historical and unique natural resources of the area.

Two Conservation Authorities were actively involved in initiating an outdoor education program. The final plans were formulated for the Scanlon Creek Outdoor Education Centre in the South Lake Simcoe C.A. and the Centre is to be opened next year. The Ganaraska Region C.A. initiated plans for the Cold Springs Outdoor Education program. This is one planning segment in the over-all multi-use development scheme for the 10,000-acre Ganaraska forest.

The Otonabee Region C.A. began land assembly for the Peterborough Valleyland Program through the core of the city to complement the urban development of this area.

Branch Administration Costs

Field Services	$ 713,181.00
Program Planning and Land Management	404,009.00
Water Management Engineering	570,760.00
Field Surveys	67,659.00
Junior Conservationist Program	65,538.00
Total	$1,821,147.00

Grants to Authorities, 1976-7

UNDER THE CONSERVATION AUTHORITIES ACT	
Ausable-Bayfield CA	$ 303,224.56
Cataraqui Region CA	751,143.21
Catfish Creek CA	40,763.96
Central Lake Ontario CA	410,900.47
Credit Valley CA	1,226,031.58
Crowe Valley CA	90,947.35
Essex Region CA	221,313.09
Ganaraska Region CA	233,670.57
Grand River CA	3,478,989.08
Halton Region CA	3,641,439.95
Hamilton Region CA	1,027,050.18
Kettle Creek CA	166,404.00
Lakehead Region CA	171,734.14
Long Point Region CA	268,672.45
Lower Thames Valley CA	525,168.85
Lower Trent Region CA	348,045.69
Maitland Calley CA	384,589.86
Mattagami Region CA	186,497.30
Metropolitan Toronto and Region CA	3,709,175.05
Mississippi Valley CA	158,954.55
Moira River CA	508,756.67
Napanee Region CA	177,375.50
Niagara Peninsula CA	464,052.59
Nickel District CA	252,278.41
North Bay-Mattawa CA	73,302.51
North Grey Region CA	352,833.70
Nottawasaga Valley CA	648,515.63
Otonabee Region CA	247,820.11
Prince Edward Region CA	151,041.18
Raisin Region CA	209,539.67
Rideau Valley CA	380,156.34
Sauble Valley CA	123,284.96
Saugeen Valley CA	372,356.86
Sault Ste. Marie Region CA	238,135.22
South Lake Simcoe CA	386,159.23
South Nation River CA	267,760.22
St. Clair Region CA	954,164.62
Upper Thames River CA	779,763.28
Total	$23,932,012.59

UNDER EXPERIENCE '76	
Grants to Conservation Authorities	$1,821,147.00

Division of Lands

Lands Administration Branch

Crown lands within the Province, including mining lands, are administered by the Branch. Its responsibilities include the acquisition of private lands where necessary for Ministry programs.

Land Acquisition Section

Private lands required for Ministry programs, such as wildlife, forest management and public recreation, are purchased by the Section. It assists in setting priorities, supervises and approves all purchases, and maintains a computerized inventory of acquired property. To assure the delivery of optimum benefits from such lands until their incorporation into programs, interim property management is provided. In the past year 2,721 acres were acquired, raising the total acquisition since the Section's formation in 1962 to more than 613,000 acres. Continued emphasis is being placed on consolidation of holdings to allow development of the properties.

Titles Section

The Section prepares and maintains a written registry of the legal documents required for ultimate disposition of Crown lands. It is also responsible for maintenance of the Ministry filing system used in conjunction with the registry for administration of the Province's Crown land base. A pilot study, scheduled for completion in the 1977-8 fiscal year, has been initiated to determine whether or not the written registry should be computerized and supplemented by additional data, in particular a geocode. A pilot test to determine the feasibility of microfilming the land files is also under way.

Additionally, the Section levies mining acreage tax and carries out procedures necessary to effect forfeiture to the Crown of alienated mining lands.

Mining Lands Section

The Mining Act gives the Section authority to manage Crown mining lands as follows:

(a) Ruling on mining leases and exploratory licences of occupation applying to large tracts where normal claim staking is impossible;

(b) Issuing permits for sand and gravel removal;

(c) Setting policy, formulating and providing interpretation of statutes;

(d) Recording mining claims and quarry permits in regional offices; auditing claims and permits at Queen's Park;

(e) Assessing all geophysical, geological and other technical survey reports; and

(f) Withdrawing Crown lands from any form of disposition.

The removal of sand or gravel from beaches, banks or waters of all lakes and streams is licensed and regularly monitored by the Section. Removals from private property are licensed as well as the large commercial extractions that provide considerable revenue in the form of royalties.

Liaison between the Ministry of the Environment and field staff specialists ensures that erosion or significant damage to fish and wildlife populations or habitat is prevented. Municipality operations are exempt from Ministry licensing and supervision.

The pit and quarry rehabilitation program on Crown lands continued under regional direction.

Public Lands Section

The primary function of the Section is management and disposition of the public land base, principally for resource and recreational purposes, through co-ordination of main office and field offices. Comprehensive guidelines and direction are provided from main office in the form of policy and procedure directives, an audit system to monitor performance quality, and training to continually update the necessary land management expertise.

Fifteen new directives were processed, published and distributed during the past fiscal year with another 13 well on their way to completion. Fifty-two candidates successfully completed the Lands Certificate Course and a four-phase training program is being developed within the Section. All but two Regions have been visited by a member of the main office staff who is responsible for the performance quality auditing function.

Office of Indian Land Claims

The Office of Indian Land Claims was established in 1976, as a separate entity within the Division of Lands with the responsibility for researching and responding to Indian land claims and other Indian land problems. It also is responsible for keeping the Ministry (and Government) aware of the possible extent of future land claims and their significance.

The Office develops Ministry positions on these claims and prepares recommendations to Cabinet. It undertakes research for these in consultation with other ministries and with the Federal Government and Indian bands and their associations. On the direction of Cabinet, it also negotiates the settlement of valid land claims with the Indian people involved.

Land Use Co-ordination Branch

The Land Use Planning, Land Use Liaison and Plan Review Sections, which comprise the Branch, continued to co-ordinate Ministry planning, assisted other ministries and planning agencies such as municipalities with land-use plans, and maintaned a sensitive-areas recording system. The Branch updated environmental assessment procedures for Ministry undertakings and co-ordinated Ministry environmental assessment responsibilities.

Strategic Land Use Plan

The Branch continued to place great emphasis on preparation of the Strategic Land Use Plan which, when completed and approved, will serve as the official co-ordinating guide for all Ministry programs that require land.

To formulate a comprehensive, co-ordinated policy, the Land Use Liaison Section held a series of meetings with other ministries to discuss a variety of land-use policies. Both main office and field staff participated in collecting and analysing data necessary for policy making.

As a result, reports have been prepared to provide background information and approach to policy for the Northwestern, Northeastern and Southern Planning Areas.

The Northwestern information report has been publicly reviewed and Phase II of the planning process prepared for review. This phase is the policy report which outlines all the objectives to be achieved. Phase III, the "Strategy" for northwestern Ontaro, is now being developed and is to be completed in 1977.

For both the Northeastern and the Southern Planning Regions, certain revisions are being made before the information report is released for public review. Similarly, Phase II is undergoing modification. Plans have been made to release both reports for each region in 1977.

Land Use Planning

The Branch again worked closely with the Ministry of Treasury, Economics and Intergovernmental Affairs on the Parkway Belt-West Land Use Plan and the Northwestern Ontario Development Strategy, and with Ontario Hydro on planning methodology for transmission corridors and their East and West System Planning Studies. It also maintained close co-operation with the Ministries of Environment, Industry and Tourism, and Agriculture and Food.

On other government levels, planning assistance was given to such projects as the Central Waterfront Plan under the auspices of Metropolitan Toronto, Design for Development, regional task forces, and to several municipalities preparing official plans, among them the Regional Municipalities of Peel, Haldimand-Norfolk, York, Halton, Perth County and the reorganized County of Oxford.

The Ministry continued to prepare local land-use plans, one of which, the Lake of the Woods General Land Use Plan, was submitted to the Ministry of Housing for circulation as an official plan.

Lake Planning

The Ministry's new three-year cottaging initiative is midway to completion.* The program is intended to expand the

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**It was incorrectly reported in last year's Annual Report that 1975-6 was the second year of the lake planning cottaging initiative. It was in fact the first year of that program's operation.*

number of cottage lots provided on Crown land in northern Ontario. Comprehensive lake plans were prepared by field staff following guidelines in the Branch's Lake Planning Manual which underwent further revision on the basis of experience gained during the previous field season.

The Branch began a study to determine the suitability of small Crown lakes and rivers for various recreational activities with particular emphasis on cottaging.

Plan Review Activity

Development proposals from individuals, private concerns, other government agencies and municipalities can have a significant effect on Ministry objectives and programs. It is important to ensure that such proposals are compatible with, and create no serious adverse impact on, MNR's objectives or programs. While proposals throughout Ontario are reviewed, development pressures are most vigorous in the southern regions. In reviewing and commenting on development proposals, the Ministry makes a valuable contribution to the maintenance of a good-quality environmet and the continuing productivity of provincial resources.

The number of plans reviewed in the past year increased by 37 per cent over the previous year to a total of 6,706. More official plans, official plan amendments, zoning by-laws and severances but fewer subdivision plans were received.

During the year, Ministry undertakings that are subject to The Environmental Assessment Act, 1975, were authorized by Regulations. The Ministry's method of conducting assessments was modified and assessments commenced for seven undertakings.

Surveys and Mapping Branch

The Branch functions as a service agency that carries out ground and aerial surveys of various types and produces a wide variety of maps for the Ministry, Government and the general public.

Two types of surveys are conducted: those which locate land boundaries or define ground position for official purposes, and those which record the nature of land and assess its future potential.

Cadastral Surveys Section

During the past year, the Section continued to maintain the township boundaries of the township survey system in the Province, with land surveyors in private practice performing the survey work under agreement. The Section provides a survey service to other Branches and maintains the Crown survey records system.

Control Surveys Section

The Section undertakes the precise fixing of requisite ground points for mapping control. The geodetic network which is thus created supports co-ordinate systems associated with surveying, engineering and geographical referencing.

In operation is a computer program that conducts mathematical adjustment of large networks of survey control. This has also been used by personnel outside the Section. Nearing completion is a data bank to manage all control survey information.

The installation of control surveys under agreements made with the Regional Municipalities of Waterloo and Hamilton-Wentworth continued this year. A similar survey agreement has been prepared with Newmarket. A program to construct a base line for the precise calibration of electronic distance measuring instruments has begun.

Inventory Section

The Section is composed of two units: Forest Resources Inventory and The Ontario Land Inventory.

The Forest Resources Inventory Unit arranged for the aerial photography of 28,000 square miles of forest land in northwestern Ontario. In addition, field sampling, photo interpretation and compilation and drafting of forest stand maps was completed with the co-operation of forest operating companies for 15,000 square miles in northern Ontario.

The Ontario Land Inventory Unit sent numerous field parties to investigate soils and terrain and evaluate the potential uses of land and water for recreation, wildlife habitat and hazards to human occupation. This Unit was disbanded March 31, 1977.

Cartography Section

The Section is responsible for production and maintenance of Ontario's topographic, territorial and geological map series. In addition to these maps, other scientific, recreational and administrative maps for both Government and public distribution, plus a variety of brochures and booklets related to resources and recreation programs of the Ministry, were produced this year.

In conjunction with the Geographical Referencing Section, further exploration was conducted in the environment of a working laboratory into Ministry applications of computer-assisted mapping systems.

Manpower and expertise was supplied towards the development of cartographic standards and subsequent monitoring of the experimental Ontario Basic Map Series.

Drafting Services Section

The Section provided general drafting and mapping services and graphics in support of Branch and Ministry programs. In addition, it maintained a graphic inventory of timber, minerals, oil, gas, land and other resources.

Geographical Referencing Section

The Section continued work on the development and testing of several thematic application projects using digital technology. A status report on the Forest Resources Inventory, Lake Measurement and Shoreline Classification projects was prepared. Investigations of interactive graphics and automated cartography systems continued. A preliminary investigation was made into the possibility of transferring the Lake Measurement and Shoreline Classification projects from an Ottawa-based federal government computer onto the Queen's Park Computing System for production purposes.

Several basic maps were digitized on the Ministry's remote sub-system to determine the current capabilities and cost effectiveness of the Federal Department of Energy, Mines and Resources' Automated Cartography System.

Location identifiers (geocodes) were produced for the centres of land parcels in the first stage of a pilot project involving computerization of Ministry land indexes.

The geocode format was designed in co-operation with the Ministry of Consumer and Commercial Relations.

Office of the Co-ordinator of Mapping Services

The Branch completed three years of studies dealing with Provincial basic mapping and geographical referencing systems, resulting in a final report, Number 10, "A Proposed Provincial Basic Mapping Policy and Program," that recommended standards of accuracy and quality for basic Provincial mapping.

Preparatory work was commenced on the definition of Provincial basic mapping standards. Contracts were let using draft standards for 85 trial maps in the Niagara Peninsula, 24 in the Timmins area and 11 in the Opasatika area. Most of these were completed by year end and are awaiting technical and consumer evaluation.

Ontario Geographic Names Board

The Board provides and maintans official names of geographic features and unincorporated places required for identification and referencing on maps, charts and related documents of the Provincial and Federal Governments. The Board Secretariat co-ordinates field surveys and other research undertaken by main office and field staff to collect and update geographic name data.

A three-month toponymic field survey project has been designed for areas in the Ministry Districts of Fort Frances, Ignace, and Atikokan. Researchers will investigate a 20,000-square-mile area for 46 federal maps scheduled for publication in 1977. Field survey projects in Kenora, Temiskaming, Dorset and adjacent areas were completed.

Ontario Centre for Remote Sensing

The Section interprets aerial photography and satellite imagery for application to the data needs of resources management, and conducts research into new remote sensing applications. This year 50 remote-sensing and research projects were undertaken.

For the first time in Canada, the thermographic technique for detecting building heat loss was put into operation.

The feasibility of conducting forest fuel mapping, regeneration success survey, forest typing and wetlands classification from satellite imagery was established.

Case study presentations were given at Ministry Regional Offices and scientific papers delivered at both national and international remote sensing conferences.

The Centre's analogue image analysis capability was increased and an investigation was conducted into techniques of analysing digital images.

Field Services Division

Forest Fire Control Branch

Once again, as was seen in the 1975 fire season, Ontario has established another record high for the number of forest fires in one year. At 3,985, the total for 1976 exceeded the previous year's record by 839 fires. The acreage, too, was extensive as 1,344,517 acres burned, to compare with the records of 2.1 million in 1923 and 1,294,800 in 1974.

Lightning was responsible for 2,086 fires or 52 per cent of the total while man-caused fires accounted for the balance. As in 1974, when northwestern Ontario was a major hotspot, the 1976 fire season will go down in history as one of the worst experienced in Ontario, particularly in the northwest region of the Province.

Suppression activity started early in the fire season, with 720 fires occurring in the west from May 24 to June 14. These fires ranged in size from 0.1 acre to 50,000 acres.

Exceptionally hot weather, high winds and lack of rain from May until the end of September contributed the most to this fire spread and, hence, to several major fire starts. The weather was predominantly sunny and dry with above-normal temperatures. The pattern was occasionally interrupted by very weak weather systems which brought lightning, but little or no precipitation.

Fire activity over the remainder of the summer continued to be abnormal under the influence of this drought. In the Dryden area alone, the total of 189 fires was four times the average of 48 fires in the past ten years.

The situation peaked between August 15 and 30. In Sault Ste. Marie, for example, two heavy lightning storms swept through the district, leaving 127 fires burning. More than 1,000 fires were reported during this time and on August 20, 120 new fires occurred, setting a new daily incidence record. Another record established during this period was the number of active fires on one day. This was 265 fires, all burning on August 24.

The Ontario fire season is normally over by October 31, up until which time The Forest Fires Prevention Act is in effect. This past year, however, fires were being reported in December. In the Atikokan area, a continuing drought kept firefighting alive until November. Major difficulty was encountered in extinguishing fires due to the deep burning.

Under The Forest Fires Prevention Act, numerous restricted fire zones were declared. In addition, four areas that were threatened by fires were placed under fire emergency orders. Approximately 350 people were evacuated from their communities under the authority of these orders. Fortunately, none of the villages burned and most people were able to return home within a few days.

In short, the 1976 fire season proved to be a challenge of endurance for everyone involved in fire control.

Fire Prevention

On 15 separate occasions, the Ministry imposed fire restriction orders which covered portions of northern and northwestern Ontario. These restrictions were declared in an effort to minimize the number of man-caused fires in the drought-affected areas and they were in place during 45 per cent of the fire season. Their effectiveness in reducing recreational fire starts was evident through checking daily fire incident patterns. Observations of certain key areas by an infra-red unit supported the observation that most people obey the restrictions. Despite this, people using the forests for recreational purposes still accounted for 20 per cent of the forest fires in 1976.

Training

One Atmospheric Environment Services weather course, designed for senior fire management staff, was held in 1976.

A total of 50 employees attended two Fire Courses which were held in the spring. This course is of 13 days' duration and successful candidates are qualified as initial attack fire boss.

Two prescribed burning seminars were held in the fall to provide fire and timber staff with the knowledge needed to understand how to plan a prescribed burn, what benefits should be derived and how to conduct the burn. Seventy employees attended these courses.

Development

Despite the demands placed on fire personnel in handling the heavy fire load, the equipment development and testing program managed to make advancements in several areas during 1976.

A committee was established to develop and maintain a forest fire suppression equipment standards manual which was ready for use in the 1977 fire season.

Through the Ministry's staff suggestion plan, whereby field ideas can be brought forward and evaluated, a number of fire-related inventions and equipment modifications were submitted in 1976. For example, a modified fuel line was designed for use with the scepter gas can and other existing auxiliary gas and jerry cans.

A helicopter-mounted ignition and dispensing system for thermolite incendiaries was developed, and a U-shaped hose strangler, which does not slip or pinch the hose, was designed. A wooden frame for pump support was designed to allow regular maintenance to be carried out with relative ease. A styrofoam device for intake floatation was also suggested.

A 250-gallon water tank that can be installed in 12 minutes was designed. Since the tank is gauged, it was suggested that it be used on trucks with low gross vehicle weights.

In addition to these in-house equipment developments, Ontario, along with six other agencies, has been involved in the bench and field testing of metric fire hose and quick-connect metric couplings.

Several products, available commercially or developed elsewhere, were examined for potential use by Ontario. These included a pocket aerial estimator, a remote ignition device and an AGAtronics Thermovision 650.

Air Service Branch

In 1924 the Air Service was formed with the purchase of 13 HS2L flying boats. W. Roy Maxwell was appointed director. Bases and fuel caches were established at strategic points. A total of 2,500 hours was flown the first year.

The more important additions to the fleet were 16 D.H. Moth seaplanes, first purchased in 1927; Vickers Vedette amphibians, 1929; four Hamilton seaplanes, 1930; four Fairchild seaplanes, 1930; four Buhls, 1935; nine Stinson gull wings, 1937; and 15 Norseman seaplanes, purchased from 1944 to 1952.

The purchase of the first Beaver aircraft in 1948 was the beginning of a new efficiency in flying operations. The Beaver and the larger model, the Otter, were designed and built to meet Ministry requirements. The success of these aircraft in Ontario has led to their world-wide acceptance.

In spite of difficult flying conditions, only 27 aircraft have been written off. The last flying fatality occurred in May, 1968. There have been a total of 25 fatalities involving Air Service operations.

In recent years, aircraft have been lost in service at Geraldton, in 1950; Temagami in 1951; at Dryden in 1952; at Lauzon Lake in 1953; Ear Falls in 1959; Kenora in 1961; and Atikokan in 1976.

Development of aerial water bombing equipment has been carried out since 1944. The latest system is contained within the aircraft floats and incorporates a variable load feature and provision for mixing a chemical water thickener. This system was installed in 10 Otters, 27 Turbo Beavers and two Twin Otters in 1968. Seven of the Turbo Beavers have been sold.

In 1965 an aircraft modernization program was initiated with the purchase of six new Turbo Beavers. A total of 28 was acquired, replacing standard Beavers which have been sold. Three Twin Otters and two King Air have been acquired. Six CS2F Grumman Tracker aircraft were purchased from Crown Assets Corporation and converted for chemical fire bombing.

During the 1976-7 fiscal year, the Ministry fleet of 43 aircraft operated out of 16 bases, flew 17,821 hours and delivered 5,472 tons of cargo.

Twenty-two mercy and emergency flights were made to rescue ill and injured persons from isolated locations.

Engineering Services Branch

During the past fiscal year, the Branch supplied support in those aspects of Ministry programs requiring professional engineering, engineering technology and construction expertise.

Projects undertaken included reports, pre-engineering design, construction and maintenance of dams, docks, navigation locks and other hydraulic structures and facilities as well as improvements to flow channels and dredging.

Pre-Engineering and Design

Projects included dams at Hill's Lake Hatchery and Methuen Lake; docks at Ignace, Red Lake and Sioux Lookout Air Bases, at Migin, Wabatong, Kerr and Carey Lakes, at Georgina Island, and at Glenora Fisheries Research Station; and a combined vertical-slot fish pass and lamprey barrier designed for an existing dam on the Lucknow River at Port Albert.

Studies undertaken by consultants included soils investigations for the Hill's Lake Hatchery Dam, Hullett Marsh, Upper Canada Bird Sanctuary, Bronte Creek Dam and Charleston Lake Dock. A flood line study was also carried out on the lower reaches of Bronte Creek.

A design was prepared, and contract supervision supplied, for the construction of Whitedog Lake Dam, a control structure to regulate water levels in the lake for the culture of wild rice by the Whitedog Indian Band.

Construction

Water control structures were built at Hill's Lake Hatchery, Lutterworth Lake, Ten Mile Marsh and Wicksteed Lake. The latter was built under an agreement with Ontario Hydro, and costs for the dam as well as the two bridges required on the access road were paid by Ontario Hydro. Modifications, to improve operator safety, were made to Dwyer's Marsh, Canonto and Summit Lake dams.

Fixed docks were built at Ignace, Red Lake and Sioux Lookout Air Bases, at Mijin, Wabatong, Carey and Kerr Lakes, and at the Glenora Fisheries Research Station. New floating docks were built at the Longbow and Blindfold portages and at Sioux Lookout air base.

Bridges were built at Turtle and Kenogamissi Rivers and at Furcate and Parker Creeks in support of the resource access road program; these structures were designed in-house.

Construction of the fish pass on the Lucknow River at Port Albert was started in the fall of 1976 and will be completed in 1977.

Ponds to provide fire protection and recreation were built at agreement forests in Tiny and Whitchurch Townships.

Improvements to Flow Channels

Further stream enhancement work was carried out on Wilmot Creek to improve the fishery habitat and provide better access for fishermen.

Maintenance

From inspection reports submitted by district and regional offices, maintenance of water control structures was carried out as required. Major repairs were made to the big lock, dam and docks at Port Carling; to dams at Charlton Lake, Samuel de Champlain Provincial Park and Thornbury; and to docks at Normandale, Elliot Lake, Peshu Lake and Sault Ste. Marie and South Porcupine Air Bases. Minor maintenance was carried out at 91 other structures.

Water Resources Management

Management of water levels and flows on lakes and rivers is undertaken through administration of The Lakes and Rivers Improvement Act.

A total of 195 location approvals was granted by District Offices for projects of which 152 were for dams and 42 for river diversions and river channelization projects.

Regional Offices granted a total of 89 plans and specifications approvals for 67 dams and 22 diversions and channelizations.

A total of 350 investigations was carried out on water regulation problems involving construction, operation and maintenance of private dams, river diversions and channelization.

Guidelines and criteria were published for use in administration of approvals under the Act. One inquiry was held, as provided for in the Act, for a proposed order to remove a dam in poor condition causing a potential flood hazard to downstream property.

Resource Access

A total of 5,552 miles of forest access, Ministry service, public transport, recreational access and Agreement Forest roads was maintained. This was an increase of 828 miles over the previous year.

The Ministry also shared, by agreement, the cost involved in maintaining 532 miles of private forest roads constructed by industry — an increase of 60 miles over the previous year.

A total of 146 miles of forest access roads was constructed or reconstructed under the Ministry's normal resource access program in support of the extraction of forest products from Crown Management Units.

The Northern Ontario Resources Transportation Committee funded construction and reconstruction projects involving 53 miles of road under the Committee's Direct Program. Under the Indirect Program, where costs are shared with industry partners, projects involving both the forest and mining industries were funded.

In addition, for the third consecutive year, the Committee funded winter road construction into the Indian Community of Round Lake, and provided funds to connect isolated Indian communities by snowmobile in the northwestern and northern parts of the Province.

Great Lakes Shoreline

Under an agreement with the Government of Canada, Ontario participated jointly in a survey to determine the nature and extent of shore damages and to make preliminary recommendations aimed at more effective shore management. The results of this survey, a Technical Report and accompanying Coastal Zone Atlas, were released during the past year.

A federal-provincial co-ordinating task force has been set up to implement follow-up programs resulting from the Technical Report recommendations. As part of this program, an atlas of flood and eroson-prone lands is being compiled for use as a planning aid by municipalities and federal and provincial agencies. A shoreland management study is under way along the Lake Erie shoreline in Essex County to develop methods of assessing alternative shoreland management policies.

A continuing public awareness program is in progress with workshops being held with municipalities, conservation authorities and professional organizations to increase awareness of Great Lakes shoreline problems and to encourage the use of good shoreland management policies.

Fleet and Mechanical Equipment

The Ministry fleet increased by 61 vehicles, 16 snowmobiles, two trail bikes and four tractors and all-terrain vehicles. This raised the fleet fixed complement to 1,682 vehicles, 525 snowmobiles, 308 tractors and all-terrain vehicles, and 855 boat and equipment trailers.

The effective size of the operating fleet is increased during the busy summer months by taking delivery of new vehicles in the spring, but holding vehicles to be replaced until fall. Replacement equipment purchased included 271 vehicles, 63 snowmobiles and 25 tractors.

Finance and Administration Division

Legal Services Branch

During the fiscal year ending March 31, 1977, amendments were made to The Provincial Parks Act (by Statutes of Ontario 1976, chapter 56).

Seventy-six regulations were made under the authority of Acts administered by the Ministry and 430 Orders-in-Council were prepared and processed through the Branch during the fiscal year.

One Federal-Provincial co-operative agreement relating to projects for the more efficient exploitation of, exploration for and development of, fishery resources in Ontario was entered into during the fiscal year.

Administrative Services Branch

The Branch is a support group offering the administrative services that lie outside the personnel and financial fields.

Services Section

Office Management

This Unit is responsible for the design, standardization, issuance and replacement of uniforms. The existing 23 uniform types are being reduced in number and redesigned. The new uniforms will be phased in over the next two years. Other responsibilities include the following:

The continual updating of the Ministry's listing in telephone directories across the Province;

Preparation of information for the government telephone directory;

The issuance of 1,500 telephone credit cards;

The issuance of identification cards (five types) and emergency pass cards to Ministry staff;

All Branch personnel and accounting functions;

The distribution of all government manuals and their revisions, as well as the Ministry's policy and procedure directives and key personnel directory;

The equipment inventory control system and the main office equipment inventory control records;

The copy centre which provides in-house printing for main office and produced more than 2.2 million copies during the year; and

The management of 205,000 active Crown Land files and the several incoming documents that necessitate the recording of 80 entries daily on the cross-reference index system, and the retrieval of 200 files daily.

Public Service Centre

The Centre is responsible for the sale and distribution of Ministry publications including geological maps, reports, circulars, technical mining publications, geographical maps, forest resources inventory maps, lake contour maps and the Provincial Topographic map series as well as aerial photographs in contact or enlarged format. The National Topographic map series and publications of the Ministry of Transportation and Communications are also available.

The Centre sold or distributed 308,000 maps and aerial photographs during the year; served 22,000 cash customers; and answered 17,000 items of correspondence and thousands of telephone enquiries.

Hunting and fishing licences will be sold at the Centre in the 1978-9 fiscal year.

A Natural Resources information booth was opened on the main floor of the Whitney Block in December, 1976. It provides information to the public on the Ministry and also handles general government enquiries. Contact is by personal call and telephone.

Data Processing Unit

This Unit accepts for keying the source documents for the Ministry's production data processing systems; schedules, submits and receives computer runs and sees that the desired reports are distributed to user branches; maintains Ministry magnetic tape library; administers the Ministry's magnetic tapes retained in the library of the Central Computing Branch; maintains sufficient systems documentation to enable a contract programmer to carry out maintenance or minor revisions when requested by user branches; assists user branches in identifying computer problems and suggesting means of rectifying such problems; and keys data from source documents onto magnetic tape or tab cards in a predetermined format. The cards and/or tapes are interpreted by the Ministry's computer programs to produce the desired reports. Over two million records are keyed annually.

Supply Section

Purchasing

This Unit is responsible for the co-ordination of the Ministry's procurement program. A wide variety of goods and services are purchased to equip the different areas of the Ministry — lab equipment, furniture and furnishings, clothing, chemicals, etc. Where feasible, bulk purchase and standing agreements are negotiated for wide use.

Last year 9,700 purchase orders were issued from this Unit. Approximately 15,000 requisitions were processed, resulting in the generation of purchase orders and Central Stationery, Telephone Services, Central Duplicating, Central Pharmacy, Central Mailing, Government Services and Print Processing Requisitions.

Central Supply

Central Supply Warehouse received a total of 330 tons of supplies and equipment during the year. Shipments of 289 tons were made by express, freight and transport in addition to mail and internal supply to main office.

A total of 1,908,000 Fish and Wildlife Licences and 1,339,000 Park Permits were distributed to field offices and 4,000 private agents who sell them to the public. These Licences and Permits (about 50 types) were distributed by 12,725 invoices.

The Warehouse also handled storage and distribution of Parks and Conservation Officer uniforms in addition to other Ministry apparel.

The Stockroom in the Whitney Block handled distribution of goods throughout the building.

The Whiteprint Copy Centre prints maps for distribution to the public. Copies totalled 39,350 in the year.

Records and Forms Management Section

The Section is the operating arm of the Ministry Records Management Committee. The Committee ensures that the Ministry complies with The Manual of Administration Directive and The Archive Act and that the goals and objectives of the Ministry agree with those of the government as a whole.

Records Management Unit

The Unit is responsible for maintaining an accurate inventory of all records, records equipment and microrecording equipment; control over the initiation, maintenance, protection, retention and disposition of all Ministry records; conducting feasibility studies regarding all microrecord systems and submitting all proposals to the Ministry Records Management Committee; conducting training seminars for the Ministry in all aspects of records management; and developing Ministry file classification plans.

Forms Management Unit

The Unit is responsible for establishing, maintaining and reviewing an inventory of Ministry forms; reviewing and approving all requests for forms printing; improvement in design of necessary forms by adherence to Ministry and Government-wide design standards; providing forms analysis and design service to users to ensure that Ministry forms will accomplish necessary operations in the most efficient and economical manner to achieve the desired results; conducting in-depth analysis of all Ministry forms to simplify the flow of each form in use in a system, and to simplify the preparation and handling of the form by removing all superfluous and redundant data with emphasis on consolidation, standardization and elimination; providing technical guidance to form originators; and conducting training seminars in forms management and design for Ministry personnel.

Accommodation Section

The Section co-ordinates the provision of accommodation for the Ministry and is the official liaison with the Ministry of Government Services for accommodation matters.

The Ministry Accommodation Plan, which is submitted to Management Board to obtain funds via the Ministry of Government Services for capital, leasing and accommodation alteration projects, is prepared yearly.

The Section supervises the development and implementation of approved projects, endeavours to facilitate communication with field offices, and ensures that the immediate, medium and long-range accommodation objectives of the Ministry are clear.

The construction projects completed through the Section during the past year included Atikokan District Office, Dryden Service Centre, Thunder Bay Service Centre, Dorion Hatchery Sub-Station, Cochrane District Office Addition and Hearst District Office Addition. The significant leasing projects arranged through the Section were the Richmond Hill Regional Office Addition, Napanee District Office Addition and Wingham District Office Addition. The Section also organized the relocation of Geological Branch to 77 Grenville Street and Dryden District Office to the new Dryden Ontario Government Building.

Internal Audit Branch

Internal Audit Branch was established as a branch of Finance and Administration Division on September 1, 1976. The branch director reports directly to the executive director of the Division.

The Branch is divided into four Sections under managers located as follows:

Northwestern Region Office
Northeastern Region Office
Maple District Office
Main Office.

The principal objective of the Branch is to provide independent evaluations and objective reports to management concerning accountability for activities at all working levels.

During the 1976-7 fiscal year, the Branch produced 96 such reports in addition to other activities.

Financial Management Branch

The Branch provides accounting and financial administrative support services for the Ministry. It maintains records of revenue and expenditure, prepares financial statements, and supervises and co-ordinates the accounting functions of the divisional and field offices. Its responsibilities include budget preparation and control, development of accounting and costing systems, financial and cost analyses, pre-audit controls and procedures, and financial liaison with Management Board of Cabinet, the Provincial Auditor, and other ministries and agencies.

Financial Report

Statement of Revenue *for year ended March 31, 1977* — *Statement No. 1*

MINISTRY ADMINISTRATION			
Recovery of Prior Year's Expenditures		$ 9,633	
Sale of Maps, Publications, etc.		447,085	
Rentals – Ministry Houses		352,369	$ 809,087
LAND MANAGEMENT			
Recovery of Prior Year's Expenditures			
Land Acquisition	$ 159,515		
Conservation Authorities	55,900		
Regional Development Projects	10,667		
Construction and Rehabilitation of Dams	9,970		
Remote Sensing	8,440		
Miscellaneous	5,274	$ 249,766	
Taxation – Mines Acreage Tax		610,859	
Royalties – Forest Protection Charges*		1,883,792	
Fees and Licences – Mines		502,821	
Public Domain			
Leasing and Licensing of Lands	$ 1,070,768		
Gas and Mining Leases	656,009	1,726,777	
Sales			
Land and Buildings	$ 1,039,174		
Recovery Fire Fighting Costs	298,653		
Equipment	283,971		
Sundry Sales	22,759	1,644,557	

Reimbursements of Expenditures – Government of Canada			
ARDA – Conservation Authorities	$ 319,681		
Dams, Reservoirs and Channel Improvements	5,626	325,307	$ 6,943,879
OUTDOOR RECREATION			
Recovery of Prior Year's Expenditures			
Nanticoke Agreement	$ 23,379		
Miscellaneous	3,468	$ 26,847	
Recreation Areas			
Park Entrance and Camping Fees	$ 4,519,672		
Park Concessions	221,371		
Park Miscellaneous	9,574	4,750,617	
Fish and Wildlife			
Hunting and Fishing Licences	$10,908,279		
Royalties	432,988		
Confiscated Articles	60,173		
Miscellaneous – Fish and Wildlife	113,787	11,515,227	
St. Lawrence Parks			
Fees	$ 1,398,060		
Sales	1,168,350		
Facilities	95,672		
Miscellaneous	11,540	2,673,622	
Frost Centre			
Facilities		257,117	
Reimbursements of Expenditures – Government of Canada			
ARDA – Extension of Redevelopment Area Parks	$ 212,460		
Rideau and Trent Canal Waterways and Adjacent Land Use Management	28,601	241,061	19,464,491
RESOURCE DEVELOPMENT			
Renewable Resource Development			
Recovery of Prior Year's Expenditures			
Co-operative Fisheries Management Agreement	$ 8,600		
Miscellaneous	2,564	$ 11,164	
Forest Management			
Stumpage**	$25,923,527		
Forest Products	206,150		
Stock Production	174,539		
Miscellaneous Timber	91,609	26,395,825	
Water Management			
Royalties – Water Power		12,988,363	
Reimbursements of Expenditures – Government of Canada			
Forest Management			
ARDA – Private Land Forestry	$ 250,000		
ARDA – Forest Stand Improvement	156,922		
Commercial Fish and Fur Resource Development Agreement	261,205		
Freshwater Fish Marketing Agreement	4,340		
Fisheries Industrial Development Agreement	654	673,121	$ 40,068,473
NON-RENEWABLE RESOURCE DEVELOPMENT			
Mineral Management			
Recovery of Prior Year's Expenditures			
Mine Rescue Stations – Recovery of Operational Costs		$ 73,407	
Mining Tax		41,041,961	
Royalties		819,967	
Fees, Licences		98,162	
Miscellaneous		3,749	42,037,246
MISCELLANEOUS			
Recovery of Prior Year's Expenditures			22,706
Total Revenue			$109,345,882

**Includes Forest Management Charges.*

***Includes Logging Roads Construction Costs.*

Estimated Allocation of Expenditures to Main Services *for year ended March 31, 1977* *Statement No. 2*

PROGRAMS	Activity Total	Sub-Activity Total	Land Management	Environmental Protection	Parks	Fish and Wildlife	Forest Management	Mineral Management	Conservation Authorities	Northern Affairs
	$	$	$	$	$	$	$	$	$	$
MINISTRY ADMINISTRATION (Pro-rated by Operating Activities)										
Main Office	2,665,548	2,665,548	224,173	545,105	582,422	431,552	681,847	168,729	31,720	
Field Offices	10,113,371	10,113,371	850,535	2,068,184	2,209,772	1,637,355	2,587,000	640,176	120,349	
Financial Management	2,621,272	2,621,272	220,449	536,050	572,748	424,384	670,521	165,927	31,193	
Administrative Services	2,211,033	2,211,033	185,948	452,156	483,111	357,966	565,582	139,959	26,311	
Information Services	2,320,315	2,320,315	195,138	474,504	506,989	375,659	593,537	146,876	27,612	
Personnel	793,166	793,166	66,705	162,202	173,307	128,414	202,892	50,207	9,439	
Junior Rangers	2,975,264	2,975,264	297,526	510,258	1,237,710	277,592	585,830	42,546	23,802	
Northern Affairs	1,432,577	1,432,577								1,432,577
Youth Corps (Experience '76)	4,464,668	4,464,668	437,992	217,246	724,487	495,991	551,240	55,749	1,981,963	
	29,597,214	29,597,214	2,478,466	4,965,705	6,490,546	4,128,913	6,438,449	1,410,169	2,252,389	1,432,577
LAND MANAGEMENT										
Water Control and Engineering	9,905,224									
Administration and Hydraulic and Special Studies		3,274,348	723,631			2,200,362	350,355			
Equipment and Plant Operation		5,138,555	1,135,621			3,453,109	549,825			
Recreation Oriented Water Facilities		999,327	220,851			671,548	106,928			
Flood and Erosion Control Facilities		32,058	7,085			21,543	3,430			
Ministry Service Facilities		442,594	97,813			297,423	47,358			
Flood Emergency Planning		18,342	4,053			12,326	1,963			
Forest Protection	14,101,284									
Communications		2,126,321	178,824	434,833	464,601	344,251	543,913	134,596	25,303	
Fire Control		11,974,963		11,974,963						
Air Service	3,883,999	3,883,999	240,419	1,964,915	169,731	1,116,261	342,569	40,782	9,322	
Extra Fire Fighting	21,586,554	21,586,554		21,586,554						
Resource Access	15,951,595									
Forest and Logging Access Roads		4,773,052	121,645	194,121	159,762	262,851	3,840,499	194,174		
Crown Land Subdivision and Ministry Service Roads		310,979	75,941	54,048	51,840	72,583	55,572	995		
Recreation Access, Public Transport and Agreement Roads		1,129,088	180,767	113,925	281,482	228,527	306,096	18,291		
Northern Ontario Resources Transportation Roads		3,942,606	3,114,659				804,291	23,656		
Moosonee Hydro Line		5,795,870	5,795,870							
Land and Water Classification	7,389,072									
Activity Support		356,850	187,382			1,499	83,539	76,401	8,029	
Surveys and Mapping		4,044,222	1,524,998				855,275	1,505,370	158,579	
Inventory		1,214,000	393,438			29,347	791,215			
Land Use Co-ordination		1,774,000	1,774,000							

Land, Water and Mineral Title Administration	9,151,811									
Activity Support		454,088	370,445					83,643		
Public and Mining Lands		5,614,523	4,580,544					1,033,979		
Land Acquisition Administration		562,283	9,334		495,821	50,887	6,241			
Land Acquisitions		2,520,917	41,987		2,222,948	228,046	27,936			
Conservation Authorities	25,832,472									
Conservation Service		1,900,459							1,900,459	
Grants		23,932,013							23,932,013	
	107,802,011	107,802,011	20,779,307	36,323,359	3,846,185	8,990,563	8,717,005	3,111,887	26,033,705	
OUTDOOR RECREATION										
Recreational Areas	30,322,548									
Administration		938,558			938,558					
Crown Land Recreation Management and Extension		2,903,003			2,903,003					
Park Management		16,482,113			16,482,113					
Park Capital		9,998,874			9,998,874					
Fish and Wildlife	17,925,362									
Wildlife Management and Research		7,094,236				7,094,236				
Fisheries Management and Research		10,831,126				10,831,126				
St. Lawrence Parks Commission	6,858,440	6,858,440			6,858,440					
	55,106,350	55,106,350			37,180,988	17,925,362				
RESOURCE PRODUCTS										
Mineral Management	8,129,696									
Administration		328,081						328,081		
Policy Analysis and Taxation		2,015,212						2,015,212		
Mineral Analysis and Service		782,164						782,164		
Geological Assessment		5,004,239						5,004,239		
Forest Management	35,726,765									
Administration		6,820,101					6,820,101			
Silviculture Operations and Support		20,806,569					20,806,569			
Timber Management		8,100,095					8,100,095			
Commercial Fish and Fur	2,065,537	2,065,537				2,065,537				
Managed Forest Tax Reduction Grants	404,695	404,695					404,695			
Algonquin Forestry Authority	610,000	610,000					610,000			
	46,936,693	46,936,693				2,065,537	36,741,460	8,129,696		
TOTAL EXPENDITURE	239,442,268	239,442,268	23,257,773	41,289,064	47,517,719	33,110,375	51,896,914	12,651,752	28,286,094	1,432,577
Percentage of Total		100%	9.71%	17.24%	19.85%	13.83%	21.68%	5.28%	11.81%	.60%

Personnel Branch

Total Staff

March 31, 1977	Regular	Probationary	Unclassified	Total
Main Office	1,094	78	270	1,442
Field Offices	2,509	224	1,833	4,566
Total	3,603	302	2,103	6,008

Total Complement of Positions	3,953
Vacancies in Complement	48
Regular and Probationary Staff	3,905
New Employees Hired 1976-7	234
Junior Rangers (Summer, 1976)	1,618

Professional Staff

March 31, 1977	
Biologists	114
Economists	8
Engineers	31
Foresters	289
Geologists	56
Mining Engineers	35
Park Planners	24
Scientists	49
Miscellaneous	73
Total	679
Resource Technicians	1,507
Licensed Scalers	1,333

Staff Turnover

March 31, 1977	
Deceased	18
Transferred	112
Released	2
Resigned	131
Dismissed	1
Retired	84
Miscellaneous	7
Total	355

*Ratio of separations to total of regular and probationary staff at March 31, 1977, was 11.0%.

Administration Staff, March 31, 1977

DEPUTY MINISTER

Dr. J. K. Reynolds

ASSISTANT DEPUTY MINISTERS

L. Ringham, *Northern Ontario*
W. T. Foster, *Southern Ontario*
A. J. Herridge, *Resources & Recreation*
J. W. Giles, *Lands and Water*

EXECUTIVE DIRECTORS

J. W. Lockwood, *Division of Forests*
G. A. Jewett, *Division of Mines*
K. K. Irizawa, *Division of Fish and Wildlife*
L. H. Eckel, *Division of Parks*
J. W. Keenan, *Division of Lands*
W. G. Cleaveley, *Field Services Division*
G. D. Spry, *Finance and Administration Division*

REGIONAL DIRECTORS

G. A. McCormack, *Northwestern (Kenora)*
R. A. Baxter, *North Central (Thunder Bay)*
J. R. Oatway, *Northern (Cochrane)*
J. M. Hughes, *Northeastern (Sault Ste. Marie)*
J. S. Ball, *Algonquin (Huntsville)*
T. W. Hueston, *Eastern (Kemptville)*
R. M. Dixon, *Central (Richmond Hill)*
W. H. Charlton, *Southwestern (London)*

DIRECTORS

W. Fullerton, *Forest Management Branch*
D. P. Drysdale, *Timber Sales Branch*
D. H. Burton, *Forest Research Branch*
Dr. E. G. Pye, *Geological Branch*
Dr. T. P. Mohide, *Mineral Resources Branch*
D. A. Moddle, *Mineral Research Branch*
D. R. Johnston, *Wildlife Branch*
K. H. Loftus, *Fisheries Branch*
J. D. Roseborough, *Fish & Wildlife Research Branch*
R. H. Hambly, *Park Management Branch*
R. J. Vrancart, *Park Planning Branch*
J. McGinn, *Lands Administration Branch*
R. J. Burgar, *Land Use Co-ordination Branch*
R. G. Code, *Surveys and Mapping Branch*
W. L. Sleeman, *Forest Fire Control Branch*
T. C. Cooke, *Air Service Branch*
S. B. Panting, *Engineering Services Branch*
A. H. Peacock, *Conservation Authorities Branch*
R. V. Scott, *Northern Affairs Branch*
A. C. Goddard, *Financial Management Branch*
R. A. Groves, *Internal Audit Branch*
H. B. Farrant, *Personnel Branch*
J. A. Queen, *Administrative Services Branch*
F. Moritsugu, *Information Branch*
Miss M. Mogford, *Policy Co-ordination Secretariat*
G. A. Hamilton, *Leslie M. Frost Natural Resources Centre*

DISTRICT MANAGERS

W. D. Adlam, *Ottawa District*
R. P. Alton, *Wawa District*
E. N. Arbuckle, *Espanola District*
J. R. Bailey, *Lanark District*
R. G. Bailey, *Napanee District*
M. P. Barker, *Atikokan District*
L. L. Bronson, *Pembroke District*
W. R. Catton, *Cambridge District*
J. K. Cleaveley, *Geraldton District*
D. J. D'Agostini, *Fort Frances District*
P. R. Davidson, *Aylmer District*
J. E. Dickenson, *Niagara District*
C. Dionne, *Gogama District*
T. E. Dodds, *Ignace District*
I. B. Earl, *Maple District*
C. E. Emblin, *Hearst District*
H. P. Endress, *Dryden District*
E. W. Everley, *Red Lake District*
D. R. Fortner, *Chatham District*
O. Goodman, *Bancroft District*
C. R. Gray, *Lindsay District*
L. J. Haas, *Terrace Bay District*
D. L. Hagar, *Blind River District*
J. E. Hamilton, *Thunder Bay District*
G. O. Koistinen, *Nipigon District*
R. G. Lightheart, *Kapuskasing District*
W. J. Lovering, *Owen Sound District*
W. D. Mansell, *Wingham District*
R. B. McGee, *Simcoe District*
D. B. McGregor, *Kenora District*
D. E. McHale, *Sudbury District*
J. G. Minor, *Kirkland Lake District*
J. R. Morin, *Cornwall District*
D. J. O'Grady, *White River District*
A. F. Papineau, *Timmins District*
W. R. Peck, *Parry Sound District*
C. E. Perrie, *Sioux Lookout District*
E. Rogers, *North Bay District*
J. E. Rumney, *Temagami District*
W. D. Schafer, *Huronia District*
J. H. Sellers, *Sault Ste. Marie District*
J. A. Simpson, *Algonquin Park District*

J. M. Small, *Chapleau District*
R. W. Tippett, *Bracebridge District*
R. H. Trotter, *Brockville District*
D. D. White, *Minden District*
G. A. Wright, *Cochrane District*
W. Vonk, *Tweed District*
(Vacant), *Moosonee District*

Equal Opportunity Program

The Women's Co-ordinator for the Ministry of Natural Resources was appointed on March 18, 1975. Career Development Workshops for women were held across the Province and attended by 238 female employees in the 1975-6 fiscal year. A follow-up study on the workshops was distributed in April, 1976.

The Affirmative Action Plan for the Ministry was approved and published in March, 1976.

A course on the Plan was prepared by the Special Projects Officer for inclusion in the Personnel Management course for supervisors and managers, with the officer or the Women's Co-ordinator conducting or participating in the course as requested.

During July and August, 1976, the Women's Co-ordinator and Special Projects Officer visited 480 female Junior Rangers in summer camps and conducted 21 sessions on the Equal Opportunity Program. The 17-year-old Junior Rangers were informed of the equal opportunity policy of the Government of Ontario and of the non-traditional job areas open to women, especially in the Ministry.

Hirings, Promotions

Women on unclassified staff made impressive progress with 70 females being hired in resource technician jobs and 38 females in such professional positions as forester, biologist and planner. This trend has not been reflected in the hiring of women on classified staff, due in all probability to the number and calibre of men holding equal qualification but longer and more varied work experience. Eight professional and five technica jobs were held by women in complement positions.

Women made some headway in the General Clerk 5 and 6 levels. Of the 15 positions open during the second six months of the fiscal year, three were filled by female employees.

Action Committees

Affirmative Action Committees have been fully operative in Northern, Northeastern and Eastern Regions since 1976 and committee meetings have been held regularly.

Ministry-wide committees were established by March, 1977, with 65 women members from across the Province being appointed to represent the Ministry's 708 female employees.

The women members elected a representative for each Region and Division. These 17 representatives will act as spokespersons for the group and be responsible for liaison with the Women's Co-ordinator.

Information Branch

The news service to the media was improved and extended during the year to step up the flow of information from the Ministry to the public. Field information services were co-ordinated with main office output by Information and Liaison Section and news releases were delivered almost daily to major news outlets.

Additional material was supplied on request to editors and broadcasters.

Material was mailed to 45,000 persons who requested information on natural resources or outdoor recreation.

Ontario Outdoors, a public service radio series, was supplied regularly to 55 Ontario stations and supplemented with *Touch Wood,* a radio series of brief items supporting the work of conservation officers in the field.

Staff support and guest personnel were provided for outdoor-oriented TV programs in northern Ontario and Metropolitan Toronto.

Outdoors Offbeat

Outdoors Offbeat, a news feature service, has replaced the Ministry newsletter because of its success with the media since its first release in typewritten format in December, 1975. During the past year, it was converted to standard newspaper typography in a form that is used directly in common printing processes. Each issue is accompanied by photos that are easily adapted to printing processes.

Outdoors Offbeat is mailed at intervals to 1,300 outlets including daily and weekly newspapers, selected periodicals, outdoor writers and radio and TV stations.

Publications

The Ministry published 36 booklets, nine folders and 10 leaflets or small folders of general interest during the year. These totals do not include scientific papers and technical reports and a number of leaflets on Provincial Parks and other installations and services. New publications of branches and field offices included the following:

About Bait-Fish in Ontario ($2.00)
Algonquin Forest Authority Annual Report
Amethyst Deposits of Ontario ($2.00)
Coping with the great Lakes (co-op with Canada Environment)
The Distribution and Characteristics of Ontario Lake Trout Lakes ($2.00)
Environment Education (co-op with Ministries of Environment, Health and Agriculture & Food)
Evaluation of the Forest Management Activity in Ontario (by Professor K. A. Armson)
Fish Ontario ($1.00)
How to Qualify for a Hunting Licence in Ontario
Isolated Communities Assistance Fund
Lake Temagami Plan for Land Use and Recreation Development
The Leslie M. Frost Natural Resources Centre
Ontario Commercial Fishery Statistics on Landings, 1971-5
Ontario's Public Land — A Guide to Its Use
Planning for Flood Emergencies
Procedure in Reporting Workmen's Compensation Claims
Tomorrow is What You Make It
Winter Fires.

Exhibits

The Branch continued to upgrade the Ministry style in exhibits during the year and prepared and managed exhibits at six major shows and exhibitions — Canadian National Sportsmen's Show, Canadian National Exhibition, Central Canada Exhibition, Royal Winter Fair, Lakehead Exhibition and International Plowing Match. Exhibits were also prepared for 30 smaller fairs and shows and a number of these were managed by field offices.

A-V and Films

In its first full year of operation, Audio-Visual and Films Section produced seven slide-tape programs and provided staff expertise and facilities to assist Regional Offices in the preparation of audio-visual presentations.

Polar Bear Provincial Park, a 16 mm color motion picture produced by Section staff, won a citation for creative excellence in international competition at the Industrial Film Festival in Chicago, U.S.A.

Section photographers completed more than 200 projects for the Ministry and produced 5,000 photographic prints and color slides.

A video-tape playback and TV program monitoring service was introduced and a library of television programs was established.

A cross-filing index system was introduced in the Photo Library. During the year, the library supplied Ministry offices with 1,400 prints and 2,600 color slides.

The Motion Picture Library loaned 2,100 films to Ministry offices and educational groups. Eight films were added to the library, bringing the number of titles to 417.

Safety Training

The staff of Safety Programme Development Section co-operated with field office staff during the past year in investigations of accidents and injuries, safety audits of Ministry buildings and facilities, power tool inspections and safety workshops on axes, chainsaws and snowmobiles. The following numbers of staff were trained as noted:

Driver training and testing	2,124
Defensive driving	876
First Aid	2,116
Other safety courses	2,180
Safety workshops	360
Safety inspections	977
Safety investigations	222
Off-the-job training (to public)	518

Central Region achieved an injury frequency rate of 11.5, the lowest in the Ministry during the past year.

Under the hunter safety training program, 26,247 new hunters were trained in 1976 by 991 instructors certified by the Ministry, bringing to 397,804 the number of hunters trained in Ontario since the program began in 1957.

Northern Affairs Branch

Towards the end of the year, the Government announced the forthcoming transfer of Northern Affairs Branch to the Ministry of Northern Affairs when it would be formally established early in the 1977-8 year. As the transfer was expected to involve a considerable degree of internal reorganization, it is pertinent to review the progress of the Branch from its establishment in 1971 to date.

Except for the high figure of 1975 which reflects the extra work load placed on the Branch by a postal strike, the number of transactions handled by the Branch increased annually as follows:

1971	58,492
1972	80,958
1973	132,975
1974	164,851
1975	257,248
1976	221,848

Branch locations developed since 1971 to include a small co-ordinating office in Toronto and 144 locations in the north — three regional offices, 24 "storefront" offices, 35 satellite offices and 82 contact points.

Northern Affairs Officers hold letters of authority under several Acts administered by other Ministries and in many cases operate across ministerial lines. They perform specific functions and provide services and facilities for other agencies.

Northern Affairs offices also serve the public as "government book stores" and distribute about 10,000 publications a month.

Program Analysis Office

The Program Analysis Office is responsible for co-ordinating the program planning and program accountability aspects of the Ministry's management system and serves as the Ministry's main contact with the Management Board Secretariat. Its accomplishments during the past fiscal year are summarized below.

Guidelines, support and conciliation of reports were provided for the assigning of output targets and associated dollars in the spring of 1976, the mid-year progress review in the fall, and the year-end review in early spring, 1977.

Managing by Results commitments with Management Board were introduced for 41 per cent of the Ministry's budget covering 12 program areas. The objective is to have 100 per cent of the Ministry's budget on MBR by 1978-9.

The Office co-ordinated the internal review and liaison with the Management Board Secretariat and subsequent monitoring of Management Board decisions on 240 Ministry submissions to the Board during the year.

Several projects of an analytical nature were initiated during the year. Examples included an evaluation of the use of Tracker aircraft in the initial attack on forest fires, a study of the Temiskaming Testing Laboratory and a review of the utilization of vehicles by Field units.

The Office co-ordinated the preparation of the Ministry's 1977-8 Estimates Submission and the Minister's Briefing Book on the Estimates for 1976-7.

Additional responsibilities included representation on committees involving a number of Ministry operations.

Policy Co-Ordination Secretariat

The Secretariat assists the Deputy Minister and his staff in co-ordinating policy planning by the following:

Providing co-ordination, integration and communication services with regard to policy planning to the various Divisions and Regions to assist them in achieving the Ministry's objectives;

Supporting the production of new policy initiatives in conjunction with the relevant Divisional and Regional Staff;

Providing support, advice and information to the Divisions and Regions in assessing long-range policy needs and directions in the context of the Ministry's mandate and government objectives;

Ensuring the widest and earliest possible multi-functional consideration of policy proposals being developed within the Ministry;

Ensuring consideration of the interministerial and intergovernmental implications of policy proposals being developed within the Ministry;

Ensuring the necessary liaison with Cabinet and its Committees, and with other Ministries; and

Undertaking special policy co-ordination assignments at the request of the Deputy Minister or members of his staff.

The Mining and Lands Commissioner

The Mining and Lands Commissioner exercises judicial, quasi-judicial and administrative powers and duties under The Beach Protection Act, The Mining Act and The Mining Tax Act, 1972, and regulations made under The Ministry of Natural Resources Act, 1972, assigning powers and duties of the Minister to the Commissioner.

Orders and judgments issued by the tribunal during the fiscal year were as follows:

869 orders extending time for performing work or applying and paying for leases;

31 orders authorizing special renewal of licences; and

61 miscellaneous orders and judgments.

The total number of orders was 961.

The revenue derived from filing extension orders was as follows:

8,687 Claims, Prior to Default	$43,435.00
612 Claims, Relief from Forfeiture	6,120.00
Total	$49,555.00

Sittings were held under The Mining Act at Kirkland Lake, Sudbury, Thunder Bay, Timmins and Toronto and under The Conservation Authorities Act at Barrie, Hamilton, London, Toronto and Waterloo. An inquiry under The Lakes and Rivers Improvement Act was held at Belleville.